SHADOWRUN 7906

RIGGER 2™

JONATHAN SZETO

RIGGER 2

FASA CORPORATION

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INTRODUCTION

If the only thing that comes to mind when you think of a rigger is the "car chick" or—even worse—the "getaway guy," then this book is for you. For those of you who always wished the rigger character could fulfill its potential as a vital element of the **Shadowrun** team—from commanding drones, to taking control of a security-rigged building or even using a vehicle as a weapon to hit stuff that gets in the way (including those pesky pedestrians)—well, you've found a home, chummer. **Rigger 2** includes everything you want to know about rigging and riggers in a single volume, from character creation to vehicle creation, from vehicle combat to drone use to rigging a security system.

The rules contained in this volume replace the rigger rules published in **Shadowrun, Second Edition** and the **Rigger Black Book.**

Rigger 2 begins with **The Rigger,** which talks about the rigger from the perspective of dice pools, skills and concentrations, cyberware/bioware and even Edges and Flaws. This section also covers what it takes to be a rigger, including insights into the mind and emotions of someone jacked into a vehicle.

From there we go straight into **Standard Vehicle Operations,** which covers everything from the basic Driving Test to vehicle statistics and attributes. This section describes what a vehicle can and can't do, and introduces the concept of Stress—the idea that a vehicle will wear down if not cared for properly. That's right, we've given the gamemaster even more options for parting a rigger from his hard-earned nuyen.

Now, what good is becoming your vehicle if you can't see what's going on around you? The **Sensors** chapter is devoted entirely to explaining how a rigger uses the sensors of his vehicle to observe and affect his world. This section also includes the basics of Electronic Countermeasures (ECM) and Electronic Deception (ED). The chapter on **Special Vehicle Operations** offers rules for operating everything from VTOLs and other airborne vehicles to hovercraft and vehicles with arms, and even pulling and towing vehicles.

Now that your rigger is fully constructed and knows his vehicles inside and out, it's time to test his abilities on the street. The chapter on **Vehicle Combat** provides rules to cover every situation, from auto chases to running down pedestrians. An expanded turn sequence incor-

porates the rigger's actions into the flow of the standard Combat Turn. The rules for magic and vehicles have been expanded and updated, offering the opportunity to include every facet of the awakened world into a single running fight! **Rigger 2** also gives the rigger the tools for the next step: firing her weapons directly from the vehicle. **Vehicle Gunnery** gives target numbers and modifiers for all vehicle-mounted and hand-held weapons, including missile rules. The addition of indirect fire and area-effect rules are custom-designed to ramp up the paranoia level in every city where your team runs the shadows.

But if you think that's all a rigger can handle, you're wrong. The **Drones** chapter describes those special friends of the rigger that allow him to see everything and be everywhere at once. This chapter covers all remote control operations needed to sic these mechanical nightmares on your enemies, and introduces a new element to the world of **Shadowrun**—robotics. Riggers interested in working from a more defensive posture can conduct **Electronic Warfare** using a remote control deck to interfere with security operations from a distance, taking advantage of a variety of tactics, from jamming transmissions to taking control of an enemy's drones. Finally, for those riggers who like to fight up close and personal, the **Security Rigger** section fleshes out the rules on rigging a building. These rules cover everything from breaking into a security system to a network combat between two riggers fighting to take control of an entire security system.

The **Advanced Rules** section is for those players and gamemasters who just want *more*. This chapter offers Quality Factors (consider them Edges and Flaws for vehicles; it's the little things you do to get your truck started in winter, the funky way you park the car to keep it from rolling, the glitch in the hatch hydraulics ...); rules for fuel consumption; advanced gunnery, sensor and electronic warfare rules; and rules for damaging vehicle subsystems.

Perhaps the most-often heard request in **Shadowrun** is for rules that allow a rigger to modify or create his own ride. Well, the wait is over! **Vehicle Design and Customization** offers a complete set of rules to create your own vehicle or modify existing ones, by adding everything from turrets to state-of-the art armor to super-injected engines to ejector seats. We even answer the burning question of how can a dwarf drive a car? **New Toys** speaks for itself—new toys made with the rigger-mad player character in mind. Missiles, drones, vehicles, mines, cyberware (including the head-implanted remote control deck) and even the first and newest robots on the market.

Finally, the **Vehicle List** provides a complete list of all vehicles ever published in **Shadowrun** products, updated to correspond to the rules in this book.

THE DEVELOPER'S SAY

In many ways, this book represents a completed first edition more than a second edition. The existing **Shadowrun** rules relegated the rigger to the status of a non-player character; not because his role was insufficiently thought-out, but because the rigger was not given enough rules within the system to spread his wings. Vehicle combat was abstracted so far as to be unusable, and drone combat was barely covered at all. Situations that seem tailor-made for riggers—pre-shadowrun surveillance, drones aiding mercs and mages on a run, riggers taking care of or taking over the security of a target locale—these were tasks that rigger players wanted to perform, but the rules just didn't cover what they needed to do their jobs.

The players were asking for ways to better integrate this character into the shadowrun team, and for more things to do with a rigger character. We chose to not focus this book on vehicles—that direction always poses the risk of turning a roleplaying game into a tactical, table-top vehicle-based game. Instead, we wanted to include the rigger in the action of the game, to find a way to incorporate his vehicle actions into the turn along with those characters who were decking, shooting guns and chucking spells.

The result was a vastly expanded rules system. To begin with, the vehicle rules went from a scant six pages in **Shadowrun, Second Edition** to 174 pages in this book. We focused on stripping those six pages of rules down to their core and relaying the foundation, at the same time making sure that the rigger remained integrated into the flow of the game session. Few things are more frustrating than for the game to slow to a crawl as the rigger and gamemaster try to figure out how they should resolve a monstrous hole in the rules (exactly how fast were you going and how much damage should you take from hitting that troll with your Dodge Scoot?).

While the options and actions for driving are fun for the rigger, nothing says **Shadowrun** like doing a lot of damage. We needed rules for using guns, from firing missiles to having a good buddy fire that turret-mounted Ingram Valiant out the back of the mini-van. These rules needed to give the player a sense of his rigger's place in the battle, and to cover launching missiles, remote targeting and area-effect damage.

Having fleshed out the rules that existed, we moved on to rules that didn't exist—rules for things the rigger clearly was meant to do, but was never given the necessary information to execute. The primary lack in the rules was for drone use. In my ideal **Shadowrun** world, drones would be used as often as guns, spirits and cyberdecks. Drones and the use of remote control vehicles—one of the coolest parts of being a rigger, in my opinion—were so woefully underdeveloped that the rigger was in danger of dying out from lack of interest. The idea of a shadowrun team using drones as "the sixth man on the team" was left to novelists and players' imaginations, mainly because the rules gave you nothing to work with. My mission for this book was to remedy that missing game application.

As you can see, just putting in the basics and making sure those basics fit into the world of **Shadowrun,** and then making sure the rules appealed to both the casual rigger player and the most serious motorhead took on us on a mission to reinvent the wheel—a wheel that can be jacked into, of course. As soon as we were sure that we'd covered all the basics, of course, we had a whole new set of concerns and questions. Those concerns and questions led to sections on sensors, things that mess with sensors, electronic warfare and an expansion of the idea of the security rigger.

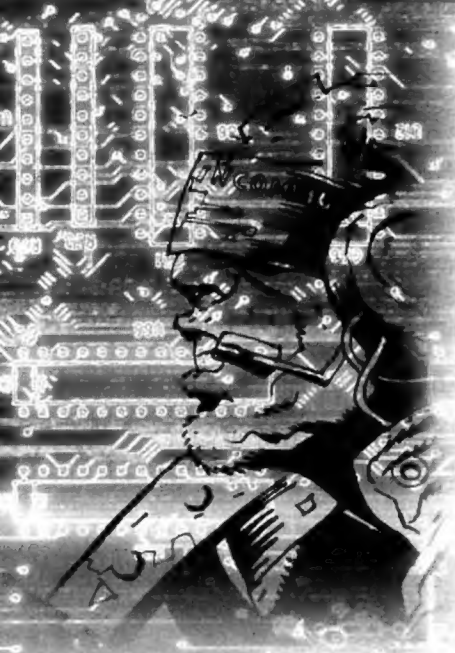
Our final goal was to create a vehicle and drone construction system, which was needed to fill the second biggest lack in the existing rules. Aware that a vehicle design system could easily become a micro-management affair of square roots, fractional multipliers and such advanced math that only NASA engineers could figure it out, we chose to create a template system with a single cost multiplier. This system allows players to both modify a "stock" version of any vehicle or drone in the **Shadowrun** universe and to create their own designs using stock parts. This forced us to define the stock types of vehicles, generate options and create the "personal touches" that would make the rigger's toys fit into the world we created for everyone else in the Sixth World—so there are hidden gun ports, turrets, ejector seats, enviro-seals, stealth armor and security devices that range from annoying to deadly.

Our template system also required us to make sure that all existing vehicles worked with that system. We re-evaluated each and every vehicle we had published to date, adjusting the numbers when necessary to bring them into line with the vehicle design system. And just to make it easy for everyone, we compiled a list of all existing vehicles and their stats: everything that a player may wish to have and a gamemaster may want to use can be found at the back of this book.

We rounded out the book with new rigger toys, advanced rules for nearly every aspect of the rigger, record sheets and fiction. And that's how six pages in one book turned into this tome you hold in your hands.

But don't panic yet! The rules presented in this book can be broken down into easily digestible pieces, depending how much you want to use. Start with the standard vehicle operations and sensors. From there, toss in some vehicle combat and gunnery. That logically takes you to electronic warfare and security riggers. If a rules section seems too advanced, skip it and use it when you are ready. If you never use electronic warfare, that's fine—use what you want and use what you need (but we highly recommend getting drones into your game right away!). **Rigger 2** was created to help you have fun when you play **Shadowrun,** not to get in the way of your enjoyment. If something in this book isn't working for you, skip it and figure it out later. We are confident you will find more in this book that you want to use than not—so jack in, boys and girls, and hit the streets. The only thing that can stop you now is your imagination ... or a fully armored Lone Star Security team!

A NIGHT IN THE LIFE...



I shoulda known it wouldn't be a simple run. It never is. The minute they call it a no-brainer, you *know* somethin's gonna go wrong. Bad wrong. Real, *real* bad wrong. And it sure's hell did on this milk run. Double-crossin' Johnson, not enough homework, whatever—somebody somewheres fragged up good, and we all pretty near paid for it in blood.

But at least I've still got Demon. It'll take awhile 'fore she's patched up and runnin' again, but she's still among the living. A survivor, that's what she is. Like me.

It started when we met the Johnson—fella in a Vashon Island knockoff suit and a porkpie hat who smelled like cheap cigars. Said he was a private detective, working for some small-time CEO wannabe who was tryin' to buy out another itty-bitty corp. Wanted "evidence of business fraud," which the detective said was in the computer systems of the little corp's HQ. Natch, the system was closed off from the Matrix, so the Johnson needed us to bust in and sit our decker down in front of the boss's terminal. I guess we shoulda asked why he couldn't hire himself a decker solo and sneak the both of 'em in through a window—but we'd all gone a time between jobs, and cred was gettin' tight. A milk run looked like a good deal, so we took it. And my part looked easiest of all—drive my buds 'cross town, drop 'em off in the warehouse district, keep an eye peeled outside while they got down to it inside, and then drive 'em away fast. No trick atall for a rigger like me, with ten years of street smarts and the fastest fraggin' Leyland-Rover in the 'plex. Souped up her engine my own self, and did a fraggin' good job. What could go wrong?

So I jacked into Speed Demon that night and roared down Intercity 5 toward the rendezvous. Round midnight on the open road ... my favorite place, my favorite time. There is nothin', but nothin', in this world as free and easy and flat-out wonderful as jacking into your wheels and flyin' down the highway at whosiwhatever-klicks-per-hour. Felt lighter than air with just me in the van; I knew that'd change once my buds were on board, but for now I soared down that road like I might take off at the end of it.

'Cept for the occasional cold wreck, the highway was empty—not a heat sig in sight for klicks. Just as well, considering—at oh-dark-hundred hours, anybody sane'd know better'n to hit the highways. Roving go-gangs like to prowl late, lookin' for unsuspecting drivers to play with. Course, I don't claim to be sane. Sane's just another word for boring as dirt. 'Sides, there was other prey for gangbangers tonight. The Spike Wheels, who claimed turf on my side of the I-5, were busy huntin' down Eye-Fivers in revenge for last night's rumble. They weren't likely to come messing with The Stuntman.

So I flew on down the road toward the night's run. Demon's visual sensors spun a rainbow around me; I saw sodium-yellow lamps flittin' overhead and blinkin' neon billboards of every color flashin' by. Off leftward I spotted the industrial district, glowin' red as a hellhound's eyes on the thermo-sensors. Flashes of chlorine green lit up the car's microwave radar—spikes from solar flare eruptions, which mess up E-M profile like nobody's business. But little drek like that didn't bother me. Me an' Demon were roadrunnin', and by the end of the night I expected to have my hands on enough cred to finally buy the new set of tires I'd been promisin' her for weeks. Ain't nice to make promises and not keep 'em, especially to the bundle of bolts you depend on to save your hoop.

I shoulda known it was too good to last.

I reached the rendezvous and picked up the team—two sams, a decker and a street shaman. With me driving getaway, Rocker and Punch packing guns and chrome, Zipdrive to surf the electrons and Catseye to take care of any magical drek (best to be prepared for everything if you want to spend your pay), we figured we were all set. And we woulda been if the set-up had been what the Johnson advertised.

Demon took us crosstown to the warehouse district, which useta be a decent workin' neighborhood until the jobs dried up and the big-money boys quit paying taxes. It's been slidin' down the scale from "blue-collar" to "wasteland" for years, but seems to have stopped for awhile at "seedy." The only folks 'round the district these days are outfits just like the one we'd been hired to crash: little mom-and-pop corps with big ideas, bigger hopes and small cash flow. It's cheap rent; it's also bad roads with holes and litter and broken glass. I could feel every crack in the pavement through Demon's tires, like you can feel bumps in the sidewalk through thin shoes. For sure, I told myself, for damn-fraggin-sure I'm buying those tires. First thing tomorrow. And a full tank of gas, too. I was feeling hungrier than I had any right to be, considering I'd snarfed down a whole bag of Hot'n'Ched'r cayenne-and-cheese-flavored soychips before starting out. So I knew Demon could use a refill, even though the monitors told me she had enough gas for tonight.

I turned off at Milton and Third, right where the Johnson had told us, killed the lights and coasted half a block to a decrepit-looking brick rectangle surrounded by cracked concrete and a chain-link fence. As I pulled up and stopped, I keyed Demon into stealth mode. The ruthenium fibers on her outside, electric blue when she wasn't on a job, faded to clear. I'd paid a nice chunk of change to get a radarbane paint job underneath, and this run was Demon's first since her makeover. The area around the Tacoma docks ain't as bad as either of the Barrens, but that just means that late at night you're risking small ordnance 'stead of large. Plus, the few Lone Star patrols sniffin' around tend to ask lots of nosy questions. So stealth seemed like an extra-good thing.

The rest of the team bailed, Punch in the lead and Rocker bringin' up the rear. Rocker gave me a wolf's grin as she slipped her headset on and leaned in the driver's-side window. "I'll be listening, Stunt. You see anything, give a holler."

"Chill," I said, and watched 'em go. Four little reddish blobs on thermo, bobbin' toward the big, empty building like some kinda giant firefiles. I didn't wish 'em luck; didn't wanna jinx 'em. Might as well have shouted "Good luck" at the top of my lungs, as it turned out. But right then the night was quiet, and seemed likely to stay that way.

I settled in to wait. Didn't jack out, of course—Demon's zoom lenses, magnification and external audio sensors made better eyes and ears for trouble than mine. I turned the diskplayer on, with the volume low enough not to scrag the audio feeds from outside. I had an old-style R&B recording I'd been dyin' to listen to, and this seemed like the perfect time. The music would keep my brain from being lulled to sleep by the silent night, much more pleasantly than the cold rain that had started to fall. ASIST can be damned inconvenient when it comes to the weather—whatever touches your wheels, you feel just like the metal body of the car or whatever is your own skin. I tuned out the pinpricks of cold and wet as best I could—you learn to, when you've hadda rig through snowstorms a time or two—and kept the sensors peeled for danger. Didn't see a thing 'cept the occasional passing pigeon and a ripped paper bag tossed by the wind; didn't hear a thing 'cept for that same wind and the dim roar of passing traffic streets and streets away. Far off in the distance, some drunk was shouting at his girlfriend. Just the normal night noises of the city.

Then the sky started to howl, and I knew we were hosed.

Wasn't really the sky, of course. It was the building's own alarm. Howling like a herd of banshees, loud enough to bring the Star down on us right quick even if nobody inside had managed to push a PANICBUTTON. Every fraggin' po-leece patrol within a klick of the place was gonna come a-runnin'—we needed to bug out right fraggin' now. So I fired up Demon's engine, just as three little red blobs came tearing outta the building. That's right, three—one of 'em big and shapeless, which meant somebody'd got hurt and somebody else was haulin' 'em along. Followed by four more blobs, a little ways behind as yet but catching up *waaay* too fast for comfort. I switched from thermo to visual sensors and saw Punch pounding toward me, with Zipdrive slung over his shoulder. Rocker and Catseye were close behind, stopping every so often to shoot or sling a spell at the sec-squad following. And I saw two sec-drones, the vidcam kind with a homing beacon that'll film your sorry hoop in the criminal act and follow you all the way home. The corps love those; they can track you to your

safehouse and send the footage straight to the ten-o'clock news. A one-two punch.

I popped the doors open as Punch came up. Without missin' a step, Punch slid Zippy off his shoulder and into the back seat, then threw himself in beside him. Rocker and Cat jumped in the middle. I slammed the doors and took off. The sec-boys behind let loose a hail of gunfire, none of which hit. I could hear Punch's FN-HAR talkin' back, but didn't dare look behind Demon to see if he'd got anybody. Then I heard some more shots that didn't come from Punch, and somethin' smacked me hard on the back of the head.

I thought I was dead. Just for a second I really thought one of the sec-skags'd plugged a bullet right through my meat skull. Then my brain caught up with me, and I realized I was still runnin' Demon down the road. Which meant I was still alive. With a killer headache and a weird, itchy feeling across the back of my scalp that told me the fraggin' bastard had punched a hole through Demon's rear windshield. I didn't have to see it to know that the whole thing was crazed with fracture lines. Have to replace it, I thought, while the rest of me concentrated on the road ahead. And also on the sirens that were startin' to wail all around as the neighborhood Star patrols twigged that somethin' was up. I shunted a smidgen more mental energy toward the audio sensors to sharpen the pickup; I needed to know what direction the sirens were comin' from.

The sensors gave me bad news. The Star was headin' toward us from the north and east. The place we'd hit, with its sec squad on full alert, was behind us to the south. That left just one direction for a getaway—west, toward Puget Sound. Which meant Demon and me'd have to head west far enough to slip past the Star and hope to highway hell that we didn't hit water first. Then

we'd have to make a sharp turn southwards, then pedal-medal it back crosstown to the safehouse. All the while keepin' the Star off our trail, or else losin' 'em somewheres in the maze of city streets.

I always did love a challenge.

First thing, though, I hadda take care of the drones. They were clingin' close, buzzin' 'round Demon like gnats. I opened the roof and raised the Vindicator from its inside mount, braced my hands on the wheel so they'd stay steady when the ASIST recoil hit me, and fired at the nearest drone. Blew the fragger to dust, and didn't hardly swerve atall. The FN-HAR barked again as Punch sent the second drone spinnin' into the side of a building. A little puffy fireball told me the second drone wasn't a problem anymore. Which just left the Star—and they were gettin' closer.

Demon and I whipped around the corner hard enough to make me dizzy for a second. The street ahead was clear, the sirens all behind us or a ways off to the side. As I gunned Demon's engines, I snuck a peek at the gridmap. Seattle's traffic grid, superimposed in bright yellow lines over a detailed map of the city, flickered to ghostly life across the top of Demon's windshield. The bright orange dot that was Demon showed up just four city blocks shy of a main drag. If I could get to it, I could take it to the I-5 and on home.

I wasn't counting on the three patrol cars that suddenly shot into the intersection half a block ahead. They'd been runnin' silent, caught me off guard. Smart bastards, the Star. Don't underestimate 'em if you want to live long. So now I had a choice to make—fast. Stop and surrender, whip around or run backwards straight into the patrol I could hear closin' in behind us, floor it and hope Demon could crash through the blockade without takin' too much damage to keep goin' or find me an alley to fly down in the next couple seconds.

Luck was with me. A patch of empty dark appeared in the solid wall of plascrete to my right. I aimed Demon's nose toward it and floored the gas. I was gonna pay for this later on—I could feel the burn in my calves from too much redlinin', like a distance runner who starts out too fast and burns up his reserves—but so long as I got us out of immediate trouble, I'd deal with the consequences.

The dark hole was an alleyway, dirty and stinkin' and narrow. We took the turn a hair too sharply; my right arm caught fire as poor Demon scraped a fender against the side of a crumblin' factory. Now she'd need a new paint job along with everything else. Rubber screeched on pavement as the patrol cars caught on to the change of plan; I knew we didn't have much time to get ahead of 'em. So I poured on more power and ignored the charley horses that were formin' in both legs. The only thing that mattered was getting to the end of the alley before the Star did and then findin' us a fast route outta there.

We'da made it clean if the fraggin' hole in the road hadn't slowed us down. A real axle-breaker—big as an oil drum and so deep I swear it went halfway to China. Hurt like hell when we hit it. Think of the worst sprained ankle you ever had, then multiply that by ten, and you've got some idea. Luck was still with us, though; the internal sensors told me Demon's axles were still intact. So I floored it and we shot toward the alley's far end.

And fraggin' near collided with a patrol car. Just one—lucky again!—and a glancing blow at that; otherwise I wouldn't be tellin' this story. Demon's right front fender got up close and personal with the front left fender of the Starmobile. Spun the cop car all the way around; when a Leyland-Rover argues with an Americar, even the razzed-up kind the Star drives around in, the Rover almost always wins. Hell of an impact, though. Felt like I'd smacked my head into a brick wall. What with all the other hell I'd been through on this joyride, the crash nearly blacked me out. But I hung on to consciousness by my fingernails, stopped Demon's fishtailin' on the slick pavement and managed to turn us in the right direction. Then I burned rubber and sent us flyin' down the road.

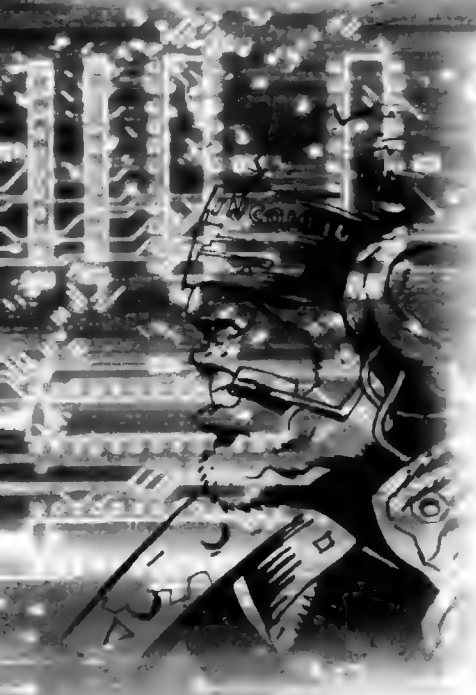
The Star followed, of course. For awhile. Demon and I dodged and wove and bumped across sidewalks, even crashed through a coupla flimsy fences, before we finally lost the last cop car. My head felt like a thousand little guys were beatin' on it with hammers, my feet were freezin' from the icy asphalt under Demon's baldin' tires, and every wild turn made me want to throw up—but I gritted my teeth and kept goin'. That's how you survive in this biz. Me and Demon didn't stop until I pulled her up in front of a clinic near the safehouse, where we knew a street doc who'd patch Zipdrive up quick. And me, too. Wild rides take their toll on a rigger's meat even if lead and fireballs don't. I had a lump on my head the size of an egg from where I'd hit Demon's roof bouncin' outta the pothole, and I was so fraggin' tired that my hands were shakin' on the steering wheel. I popped the doors so Punch could take Zipdrive out, then jacked out and just sat for a moment. Just sat and breathed, and thought about how nice it was to be able to do that.

After a little while I got out of the van. Almost fell over when I tried to stand up; just for a second, my brain had some trouble with the difference between wheels and feet. Like gettin' your land legs back after you've been on the water a time. Then I started walkin' and that was even worse. Every muscle was screamin' at me, and my calves were threatenin' to go on permanent strike. I told 'em to save it and staggered on. The pain was a good thing in one way; it kept me from thinkin' too much about the size of Demon's repair bill. Not that I grudged her any of it, mind—but like I said before, cred was tight. And after this hose-up, I knew we wouldn't get so much as a plugged nuyen from the Johnson unless we took it.

Which we did. Well, Rocker and Punch did. Rocker don't like bein' double-crossed, and Punch ... well, sometimes he just likes to break stuff. Specially the heads of people fool enough to rip him off. My share of the "insurance payment" was enough to fix Demon up, mostly—though she'll have to wait awhile for another stealth paint job. Those things *cost*.

Hell—maybe I'll just send the bill to the Star.

THE RIGGER



Neither fish nor fowl, neither decker nor street warrior, the rigger may be the most unique and misunderstood character in the **Shadowrun** universe. This chapter strips the rigger down to the numbers and rebuilds him to illustrate the process of creating a rigger character.

CHARACTER CREATION

Either the priority system (p. 47, **SRII**) or the point-based system (p. 20, **Shadowrun Companion** (**SRComp**)) can be used to create rigger characters. No racial restrictions apply to rigger characters.

SKILLS AND CONCENTRATIONS

Riggers must be proficient in a number of different skills if they want to stay in biz beyond their first runs. For obvious reasons, Vehicle Skills are most important for a rigger, but other skills such as Build and Repair, Gunnery and Electronics will also help a rigger do his job.

Vehicle Skills and Defaulting

Nearly every time a rigger character jacks into a vehicle, he will have to perform some feat that requires a Driving Test. Consequently, Vehicle Skills are a must for riggers. And because the simsense experience of rigging translates vehicle actions into body maneuvers and sensations, riggers can default between Vehicle Skills and Concentrations more easily than non-riggers.

Whenever a rigger controlling a vehicle or remote control deck via a vehicle control rig (VCR) attempts to default to a Vehicle Skill or Concentration from another Vehicle Skill, Vehicle Concentration or Reaction Attribute, each dot crossed adds a +1 modifier instead of the standard +2 modifier. This half-modifier rule applies only when a rigger is jacked in and only when the rigger defaults from Reaction or a Vehicle Skill/Concentration to another Vehicle Skill/Concentration. A rigger cannot use this rule if attempting to default to or from a non-Vehicle Skill (including Vehicle Build/Repair Skills).

Characters who do not possess VCR cyberware cannot use this half-modifier rule when driving a vehicle using a datajack, even if the vehicle is adapted for rigger operation.

Deacon, a landlubber rigger who possesses the Car Skill, finds himself on a run involving a waterborne infiltration of McNeil Island in Puget Sound. Fortunately, Deacon's employer generously "loaned" him a rigged Aztech Nightrunner for the job.

*Deacon doesn't have the Motorboat Skill needed to operate the Nightrunner, so he must default from his Car Skill to the Motorboat Skill. On the Revised Skill Web (p. 47, **SRComp**), a default from the Car to the Motorboat Skill crosses four dots, which normally would impose a +8 modifier to any Driving Tests made with the defaulted skill. However, Deacon is a rigger and the boat is equipped with a VCR, so the default imposes a +4 modifier to Deacon's Driving Tests.*

Build/Repair Skills

Build/Repair Skills are used for modifying and upgrading vehicles as well as repairing damaged vehicles. In addition to the standard Vehicle B/R Skills, characters or their mechanics need the Electronics or Computer B/R Skill to install or repair certain vehicle components such as drones, electronic countermeasures (ECM) and drive-by-wire systems.

If a particular installation or repair task calls for Skill Tests with more than one B/R Skill, the character must succeed in all tests to successfully complete the specified task.

If one required B/R test succeeds and another fails, the character can repeat the failed test, but the target number increases by +1 for each subsequent test. The test target number does not return to its original value until the player character increases his or her B/R Skill.

When reducing the base time required to accomplish a specific task, a player can combine the successes generated on all required tests. However, if any required test produces a result of all "1s," the entire attempt at the task suffers a disastrous failure.

Gunnery Skill

The Gunnery Skill comes into play any time a rigger uses a vehicle weapon while rigging, whether mounted on the vehicle he's jacked into or on a drone he is controlling via a remote control deck. No matter what the nature of the weapon in question, the Gunnery Skill rather than the Firearms Skill applies because the mindset of firing a vehicle weapon shares more with the Gunnery Skill than with the Firearms Skill. The latter focuses primarily on the discipline of the physical body—body positioning, breath control and trigger squeeze—while the former favors mental procedures such as proper sight picture, range estimation and determining maximum effective kill zones.

The Gunnery Skill includes a Concentration for Indirect Fire. For information on using this special skill, see **Indirect Fire**, p. 60.

Computer and Electronics Skills

Certain concentrations of the Electronics and Computer Skill are especially useful to riggers. The Control Systems Concentration of the Electronics Skill applies to actions working with a remote control deck, while the Electronic Warfare Concentration is used when conducting electronic warfare.

The Non-Matrix Programming Specialization of the Computer Skill is used to phrase commands to drones in an ordered, logical manner that a drone's "dog-brain" can understand. The specialization allows the controlling player to add additional dice to a drone's Comprehension Test.

See **Issuing Commands**, page 66, for more information on using these Skills and Concentrations.

Vehicle Stealth Concentration

The Vehicle Stealth Concentration of the Stealth Skill covers the same activities as the standard Stealth Skill (sneaking around, tracking, tailing and so on) but applies when a character is driving vehicles. Characters may also further specialize in this Concentration in any of the normal aspects of the Stealth Skill.

Vehicle Tactics Specialization

The Vehicle Tactics Specialization of the Tactics Concentration helps characters coordinate the tactics of small groups of vehicles. The Specialization works in conjunction with the new BattleTac IVIS system, which enhances the coordination between drones performing a common mission. For more information on the use of this Specialization, see **The BattleTac IVIS System** (p. 67).

EDGES AND FLAWS

Edges and Flaws (p. 21, **SRComp**) provide additional depth to player characters. Because of the nature of the vehicle control rig (as well as simsense technology in general), certain Edges and Flaws will have different effects on a character jacked into a vehicle. These effects are noted in the following entries.

Adrenaline Surge

The Adrenaline Surge Edge applies only to physical actions in the physical world. The Edge has no effect on the actions of a character who is jacked into a rigged system or into the Matrix. Additionally, the Edge has no effect on a character who is driving a rigged vehicle using a datajack link.

Bio-Rejection

The Bio-Rejection Flaw causes a character's body to reject cyberware implants, including the implants required to operate a vehicle control rig. Consequently, riggers cannot take this Flaw.

Blind and Deaf

Individual gamemasters and players must determine if the Blind and Deaf Flaws affect the actions of specific characters jacked into rigs or the Matrix. Simsense works by directly stimulating the vision and hearing centers in the occipital lobe of the brain, so if either of these Flaws is caused by a nerve defect, it may not affect a character who is rigging. However, if the Flaw is caused by a brain disorder, it can make rigging impossible.

If these Flaws do not affect a character's rigging actions, the Blind Flaw is worth –2 and the Deaf Flaw is worth –1. If the Flaws do affect a character's rigging, both Flaws are worth their full values.

Night Blindness

This Flaw does not apply when rigging, because rigged vehicle sensors have image-intensifying capabilities and automatically adjust the brightness level of simsense visual stimuli to match the brain's visual capability.

Night Vision

This Edge does not apply when rigging. See the Night Blindness Flaw.

NEW EDGES AND FLAWS

The following new Edges and Flaws were designed with riggers in mind, but they may be applied to any character archetype, including non-technical characters such as magicians, at the gamemaster's discretion.

SKILL FLAWS

Computer Illiterate
Value: –3

A character with the Computer Illiterate flaw has extreme difficulty working with computers and other electronic devices. Such characters have trouble performing such simple tasks as using an unfamiliar telecom, sending e-mail or programming a trideo recorder.

During game play, the character receives a +1 modifier to all tests that involve a computer or some other electronic device in any way, shape or form (for example, a mage with this Flaw would suffer this modifier when attempting to read another mage's electronic hermetic library). Additionally, the gamemaster may require the character to make Success Tests (Target Number 2 or 3) to complete tasks that most people in 2058 take for granted (this can be used to add dramatic tension or comic relief to a game).

Even techno-junkies such as riggers and deckers may have this Flaw, because simsense technology, icon-oriented Matrix programming and the boom of reality filters and sculpted systems have greatly reduced the level of technical know-how needed to rig or deck.

MENTAL EDGES AND FLAWS

Sensitive Neural Structure
Value: –2 or –4

Characters with a Sensitive Neural Structure have an especially delicate nervous system and are more vulnerable to neural damage from BTLs, black IC, rigger dump shock and other damaging forms of simsense. Whenever a character with this Flaw must resist these types of damage, reduce the character's effective Willpower Rating by 1 for a –2 Flaw, and by 2 for a –4 Flaw. Willpower may not be reduced below 1 this way.

Simsense Vertigo
Value: –2

Characters who suffer from Simsense Vertigo experience feelings of disorientation when they use cyberdecks, vehicle control rigs, entertainment simrigs, smartlinks, display links or any other simsense technology. Such characters receive an additional +1 modifier to all target numbers and a –1 modifier to Initiative when operating any simsense-related device.

Spike Resistance
Value: 2 or 4

Characters with the Spike Resistance Edge have increased resistance to high simsense spikes and harmful forms of ASIST, such as black IC or rigger dump shock. When such characters resist these types of simsense-related damage, increase the character's effective Willpower by 1 for every 2 points of Spike Resistance the character possesses.

OTHER EDGES AND FLAWS

Gremlins
Value: –1, –2, –3 or –4

Any equipment touched by a character with the Gremlins Flaw immediately displays an odd tendency to malfunction. Any time such a character handles a piece of equipment, roll 2D6. On a result of 2, the equipment breaks down. The severity of the failure depends on the value of the Flaw.

On a 1-point Flaw, affected equipment operates with a +1 or –1 modifier, whichever works against the character. The modifiers apply to both Success Tests and effect-value ratings (such as a weapon's Power, a sensor's Flux Rating, a cyberdeck's MPCP and so on). To make such equipment work, the character must expend a Simple Action to bang the device against a hard surface. The equipment will function normally during the character's next Combat Phase.

On a 2-point Flaw, affected equipment simply does not work. Again, a sharp jolt (and a Simple Action expended by the character) will bring the unit back on-line in the character's next Combat Turn.

On a 3-point Flaw, the equipment suffers a major malfunction and operates with a +2 or –2 modifier (again, whichever is detrimental to the character). The modifier applies to Success Tests and effect-value ratings.

Such equipment must be repaired before it will work again. To find the cost of such repairs, multiply the equipment's cost by .2 and add the result to the repairman's labor charges, if applicable (see **The Mechanic Contact,** p. 19).

On a 4-point Flaw, the equipment breaks down and ceases to work. Only a major overhaul (and some raised eyebrows from the local repairman) will get the unit functioning again. To find the cost of this repair, multiply the equipment's cost by .5. Add labor charges to the result, if applicable.

If a character with the Gremlins Flaw is driving a vehicle, one of the vehicle's major subsystems (steering, brakes, sensors and so on) or special modifications or features (customized engines, vehicle weapons, special accessories and the like) may be affected. The gamemaster can roll for each separate item or simply roll once and choose the system that goes down.

The Gremlins Flaw has no effect on cyberware, bioware or magical equipment such as ritual materials, foci and fetishes. However, the Flaw may affect hermetic libraries on electronic media, resulting in lost files, unrecoverable memory errors, short circuits or even an electrical fire.

Vehicle Empathy
Value: 2

Characters with this Edge seem to understand vehicles better than most people and can coax improved performance from vehicles simply by being in physical contact with them. Whenever such a character is in physical contact with a machine (either through manual controls or jacked into the vehicle), reduce the Handling of the vehicle by 1.

DICE POOLS

Dice Pools enable player characters to use extra dice during Skill Tests. Each specific Dice Pool rating determines how many dice are available in a character's Dice Pools, but the number of Dice Pool dice added to a particular test may never exceed the character's rating in the test's skill. All Dice Pools refresh at the beginning of each Combat Turn.

A number of different pools—specifically, the Control Pool, Combat Pool and the Task Pool—come into play when a rigger is jacked into a machine. The new IVIS Pool applies when using drones equipped with the IVIS system.

The following rules for these Dice Pools replace the Dice Pool rules presented on pages 84–85 of **SRII.**

CONTROL POOL

The Control Pool is equal to the rigger's Reaction, plus any enhancements gained from the vehicle control rig (VCR) cyberware. Any indirect modifiers from cerebral boosters and encephalons apply as well.

Control Pool dice may be added to any test that deals strictly with the control of a vehicle. They may be used on Maneuver Tests and tests made to resist damage from attacks against a character's vehicle, but they may not be used for tests made when firing vehicle weapons or using vehicle sensors.

COMBAT POOL

The rigger may add dice from the Combat Pool to any Gunnery Tests made for firing vehicle weapons using a rig. However, the number of Combat Pool dice cannot exceed the character's Gunnery Rating. If the character is using a Concentration or Specialization, the Combat Pool dice may not exceed the Concentration or Specialization Level.

TASK POOL

The Task Pool is available to any character who possesses an encephalon or a cerebral booster (pp. 49, 23, **Shadowtech**). Task Pool dice may be applied to Technical, Knowledge and Build/Repair Skill tests.

The Task Pool is important to riggers because players can add Task Pool dice to Electronics Tests, which come into play in remote control, sensor and electronic warfare operations. (See **Electronic Warfare,** p. 69, for more information on the use of the Electronics Skill and its Concentrations in rigger operations.)

IVIS POOL

The IVIS Pool is available to riggers controlling drones equipped with the BattleTac IVIS system. When using the IVIS system, the rigger may use IVIS Pool dice to augment tests made when his drones are performing group tasks. For more information, see **The BattleTac IVIS System**, page 67.

THE VEHICLE CONTROL RIG

Vehicle control rig (VCR) cyberware sets the rigger apart from all other **Shadowrun** characters. Without this piece of cyberware, the rigger is just another combat-oriented character who can drive a car. The VCR translates the rigger's neural impulses into various vehicle operations—stop, accelerate, turn left, fire turret gun, perform sensor sweep and so on—so that the vehicle responds almost instantaneously to the rigger's mental command.

A vehicle control rig gives the rigger a Control Pool, as well as conferring Reaction and Initiative bonuses for vehicle and drone combat. Reaction and Initiative bonuses normally provided by other factors do not apply; the VCR is the only source of such bonuses for the rigger engaged in vehicle and drone combat.

RIGGING VERSUS DECKING

Rigging and decking both use simsense virtual simulation technology, and riggers and deckers both rely on pure brainpower to do the job. However, that is where the similarities between the two end.

When decking the Matrix, a character uses the higher intelligence centers of his brain. In contrast, rigging a vehicle is much more reflexive and instinctive—much like playing an arcade game—and most of the required mental activity takes place in the rigger's lower brain. Consequently, deckers cannot interact with a vehicle control rig, as they lack the proper hardware to interface with a vehicle control rig's ASIST protocols. Deckers and other characters without VCR implants can jack into a rigged vehicle if it has a datajack link and drive it normally, but they gain no bonuses other than the +1 to Reaction associated with a standard datajack connection (see **Datajack Port,** p. 124).

Deckers and other non-riggers with datajacks may also interact with rigged remote control decks in the "captain's chair" mode (see **Operative Modes**, p. 65), but they cannot interface directly with, or "jump into," a drone (see p. 65). Likewise, deckers cannot use Response Increase hardware to improve their Reaction or Initiative. Non-riggers cannot interface with a CCSS security system, while deckers can do so only with a special accessory and severely degraded performance (see **Decking a Rigged System,** p. 80).

Conversely, riggers tend to be sloppy deckers, as their enhanced thalami encourage knee-jerk reactions rather than the intense cerebral concentration necessary for surfing the Matrix. To reflect this, rigger characters suffer a +1 modifier to all target numbers when decking in the Matrix. Additionally, reduce the rigger's Hacking Pool by the level of his VCR.

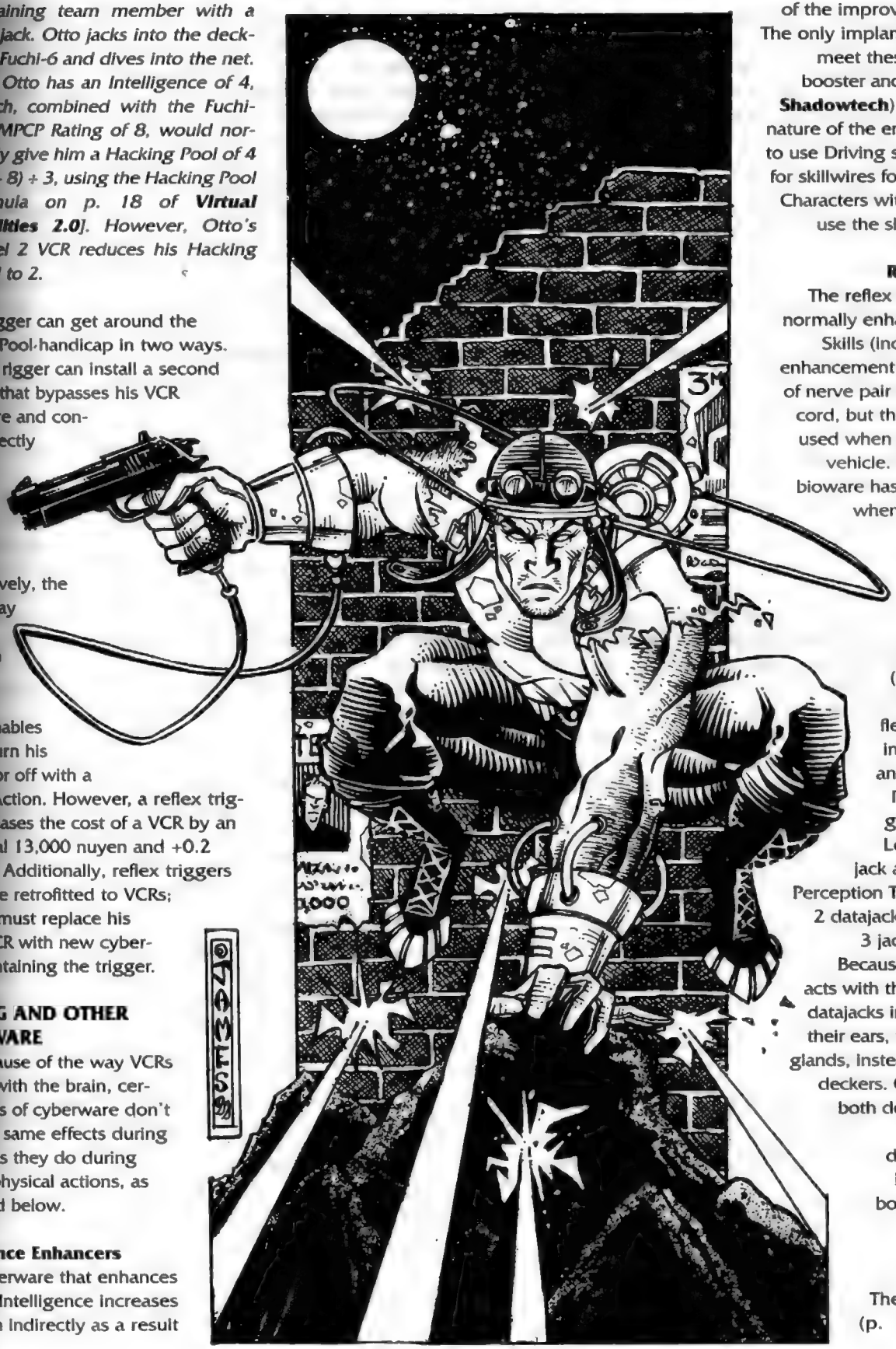
The Jackson Street Posse suffers a major loss when its decker is geeked in a gang ambush after leaving a meet with a Mr. Johnson. So when the team needs some information from the Matrix for its next run, it turns to its resident rigger, Otto Matick, because he's the only

remaining team member with a datajack. Otto jacks into the decker's Fuchi-6 and dives into the net.

Otto has an Intelligence of 4, which, combined with the Fuchi-6's MPCP Rating of 8, would normally give him a Hacking Pool of 4 [(4 + 8) ÷ 3, using the Hacking Pool formula on p. 18 of ***Virtual Realities 2.0****]. However, Otto's Level 2 VCR reduces his Hacking Pool to 2.*

A rigger can get around the Hacking Pool handicap in two ways. First, the rigger can install a second datajack that bypasses his VCR cyberware and connects directly to his cerebral cortex.

Alternatively, the rigger may install a VCR with a reflex trigger, which enables him to turn his VCR on or off with a Simple Action. However, a reflex trigger increases the cost of a VCR by an additional 13,000 nuyen and +0.2 Essence. Additionally, reflex triggers cannot be retrofitted to VCRs; a rigger must replace his entire VCR with new cyberware containing the trigger.



RIGGING AND OTHER CYBERWARE

Because of the way VCRs interact with the brain, certain types of cyberware don't have the same effects during rigging as they do during normal physical actions, as described below.

Intelligence Enhancers

Cyberware that enhances Intelligence increases Reaction indirectly as a result of the improved Intelligence attribute. The only implants published to date that meet these criteria are the cerebral booster and encephalon (pp. 23, 49, **Shadowtech**). Furthermore, the unique nature of the encephalon enables riggers to use Driving skillsofts without the need for skillwires for the purposes of rigging. Characters without encephalons cannot use the skillsofts without skillwires.

Reflex Recorder Bioware

The reflex recorder bioware implant normally enhances a character's Active Skills (including Vehicle Skills). The enhancement improves the functioning of nerve pair clusters around the spinal cord, but these nerve clusters are not used when a rigger is jacked into the vehicle. Therefore, reflex recorder bioware has no effect on Driving Skill when a character is controlling a vehicle using a VCR.

Datajacks

The improved datajacks in the **Shadowtech** sourcebook (p. 45) increase the rate of information flow between flesh and machine. Thus, an improved datajack (Level 2 and higher) adds a bonus to Perception Tests while rigging. For every level above Level 1, an improved datajack adds one additional die to Perception Tests (for example, a Level 2 datajack adds 1 extra die, a Level 3 jack adds 2 dice and so on). Because of the way the VCR interacts with the brain, riggers have their datajacks installed behind and below their ears, next to the submandibular glands, instead of at the temples as do deckers. Characters who wish to be both deckers and riggers without suffering the penalties described in Rigging versus Decking, p. 16, must have both a decker datajack and a rigger datajack.

Move-by-Wire Systems

The move-by-wire system (p. 39, **Cybertechnology**)

works by inducing a continual state of quasi-epileptic seizure in a character. A computer in the system channels the seizure into motion whenever the brain tells the body to move. Consequently, the move-by-wire system works in direct opposition to a VCR.

Each level of move-by-wire reduces the effective level of a VCR by 1 (i.e. –2 to Reaction and –1D6 to Initiative) and lowers a character's Control Pool by 1. If a rigger's move-by-wire rating is equal to or higher than his VCR rating, he receives no bonuses to Reaction and Initiative while rigging, but he still benefits from the Control Pool (assuming that the move-by-wire system has not negated it).

Monkeywrench has a Level 3 VCR (+6 Reaction, +3D6 Initiative) and a Control Pool of 10. If Monkeywrench received a Level 1 move-by-wire system, it would reduce his rig enhancement to +4 Reaction and +2D6 Initiative and would reduce her Control Pool to 9. A Level 3 move-by-wire system would completely negate any bonuses to Reaction and Initiative and leave Monkeywrench with a Control Pool of 7 dice. A Level 4 move-by-wire would have no additional effect on Monkey's Reaction or Initiative, but would reduce his Control Pool to 6.

RIGGING AND CYBERMANCY

Cybermancy allows a character to possess more cyberware than his Essence Attribute would normally permit. (For basic rules governing cyberware and Essence, see p. 43, **SRII.** For basic cybermancy rules, see p. 78, **Cybertechnology.**)

Most riggers shouldn't need to take enough cyberware to make cybermancy necessary, unless they want to improve their performance outside of vehicles. Riggers who choose cybermancy may experience a dangerous side effect during rigging—increased susceptibility to "getting lost in the details" (p. 82, **Cybertechnology**).

Because riggers trade the neural sensations of their body for that of a machine, they are likely to get lost within their machines while rigging and forget that they are human. Consequently, a rigger's invoked memory stimulator, or IMS, will kick in far more frequently than that of a non-rigger cyberzombie.

Rigger-zombies get lost in the details whenever all roll results are successes on a Perception Test with a modified Target Number of 4 or more (instead of 5 or more). In addition, the IMS kicks in after the player fails only two consecutive Willpower Tests to escape this condition, rather than five consecutive failures.

MAINTENANCE AND OVERHEAD

Equipment is like contacts; if you don't take care of it, it won't take care of you. Even under normal operation, vehicles require periodic maintenance checks to stay running. Considering the extreme pedal-to-the-metal paces that riggers put their vehicles through, maintenance becomes especially important.

Note that the following maintenance rules are NOT the same as the SOTA rules presented in the **Shadowrun Companion** (pp. 85–87). SOTA reflects the relative obsolescence of a machine compared to the technology curve. The maintenance rules below reflect real degradation caused by normal use.

Under the basic **Shadowrun** rules, maintenance-related issues such as fuel, storage and scheduled services are covered by a character's Lifestyle costs. However, under the Lifestyle descriptions in **SRII** (p. 189), most characters don't own or operate a vehicle unless they maintain a Middle or higher Lifestyle. Furthermore, the Lifestyle rules may not adequately reflect the large numbers of sophisticated and modified drones and vehicles that riggers may possess.

The overhead cost of a vehicle includes costs for routine maintenance, fuel consumption and storage. To determine a vehicle's monthly overhead, first calculate the vehicle's cost value. The cost value is equal to the vehicle's base nuyen value plus the value of all of its accessories and modifications. (The base nuyen value is the amount listed in the appropriate sourcebook, not the final price the character paid for the vehicle, which is altered by Availability and Street Index.) The costs for all vehicles previously published in various **Shadowrun** sourcebooks appear in the Vehicle List, beginning on page 148.

Next, calculate the total number of Stress Points (see **Standard Vehicle Operations,** p. 25) that the vehicle has accumulated over the past month of game time. Individual gamemasters determine when vehicles incur Stress in their games.

The monthly overhead cost for a vehicle is equal to 1 percent of the vehicle's cost value (the cost value divided by 100), rounded up, plus ten times the Stress Points accumulated over the past month.

Cost Value ÷ 100 + (Stress Points of past month x 10) = Monthly Overhead

If desired, characters may pay for some or all overhead cost with Good Karma instead of nuyen. This Karma expenditure reflects the time and effort spent between adventures keeping the vehicle up to snuff. In this case, each point of Good Karma covers 500 nuyen of overhead costs.

Josie Cruise owns four vehicles: a rigged and heavily modified Hughes Stallion, a rigged and modified Leyland-Rover van, an unmodified Eurocar Westwind 2000, and an off-the-shelf Aztechnology GCR-23C Crawler drone. During a month when those vehicles incur no Stress Points, their overhead cost would be calculated as follows:

Vehicle	***Cost Value***	***1 percent of Cost Value***
Modified Hughes Stallion	*500,000*	*5,000*
Modified Leyland-Rover van	*40,000*	*400*
Eurocar Westwind 2000	*100,000*	*1,000*
Aztechnology GCR-23C Crawler drone	*1,250*	*13*

***Total Overhead Cost** = 6,413¥*

Josie believes that any decent rigger should take good care of the vehicles he uses, so she spends a considerable amount of time between runs keeping her vehicles at prime operational readiness. Josie's player spends 4 points of Good Karma on vehicle maintenance this month, which reduces the overhead cost by 2,000 (4 x 500). That leaves her with a final overhead cost of 4,413 nuyen.

LIFESTYLE REDUCTIONS

Riggers who maintain a Middle or higher Lifestyle receive a discount to overhead costs, because part of these Lifestyle levels includes owning and maintaining a vehicle. Middle Lifestyle reduces total monthly overhead costs by 200 nuyen. High Lifestyle reduces total monthly overhead costs by 1,500 nuyen, and a Luxury Lifestyle reduces total monthly overhead costs by 3,000 nuyen. Characters may distribute Lifestyle discounts among their different vehicles as they see fit.

Josie Cruise normally lives a Middle Lifestyle. Because Middle Lifestyle grants a 200-nuyen credit to overhead costs, her monthly overhead drops from 6,413 to 6,213 nuyen before applying any Karma.

After a successful run retrieving a rare tropical flower from the jungles of Amazonia, Josie's bonus allows her to boost her Lifestyle to Luxury level for six months. During those six months, Josie receives a 3,000-nuyen discount to her overhead costs, so her monthly overhead falls to 3,413 nuyen before spending Karma.

Neglecting Overhead

If a character neglects to pay his monthly overhead upkeep costs, wear and tear degrades his vehicles. For every month the overhead cost of a vehicle is not paid, the vehicle accumulates 1 Stress Point.

However, a character can restore Stress Points lost in this manner during subsequent months. To do so, the character must pay the overhead cost for the missed month in addition to the cost for the current month, spend 1 point of Good Karma and make a successful Vehicle Build/Repair (4) Test. Success restores 1 Stress Point lost due to unpaid overhead.

After an unresolved misunderstanding with the UCAS Air Force over Seattle airspace, Josie Cruise is forced to hide out for a month in the Council Lands while the heat blows over. Because she left her Eurocar Westwind in storage in a Tacoma long-term garage, she is forced to skip maintenance on the sports car. As a result, the Westwind gains 1 Stress Point by the end of the time period.

When Josie gets back to the Seattle metroplex, she will have to spend an extra 1,000 nuyen in overhead costs and 1 point of Good Karma to make up for the missed overhead. Additionally, she must make a Car B/R (4) Test before she can remove 1 point from the car's Stress Rating.

THE MECHANIC CONTACT

A mechanic is a special contact of particular importance to rigger characters. Most shadowrunners use their contacts for two purposes: obtaining information and getting equipment. Riggers use their mechanic contacts for these two purposes, and also rely on them to repair their vehicles and machines and install vehicle modifications.

In **Repairing Vehicles** (p. 26) and **Vehicle Customization** (p. 118), the costs listed for repairing or modifying vehicles are always preceded by the term "Parts Cost," because these costs cover the purchase of required parts only. Characters must install those parts themselves or find someone else to do so. Thus, riggers turn to shadow mechanics, unless the rigger has the wide assortment of Build/Repair Skills needed to do the job.

If a rigger asks a mechanic to fix or modify her vehicle, the mechanic is going to charge her for labor. Hey, mechanics are people too, and they need nuyen to buy food, pay rent, connect to the Matrix and so on.

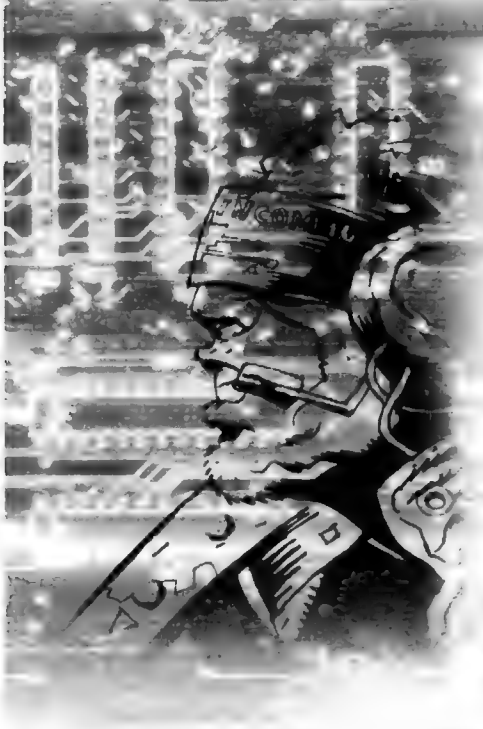
The going rate for shadow mechanics is 100 nuyen per work hour (modified by the Lifestyle percentage, if playing a campaign in a city other than Seattle). If this rate sounds somewhat high, keep in mind that the mechanic is doing extra service in consideration for his client of dubious legal standing (like not registering vehicle weapons, forgetting to log in work hours with the garage management, forging names and SINs for requisition orders and so on). Mechanics will work eight hours a day, five days a week. Any overtime beyond that is charged at time and a half or more.

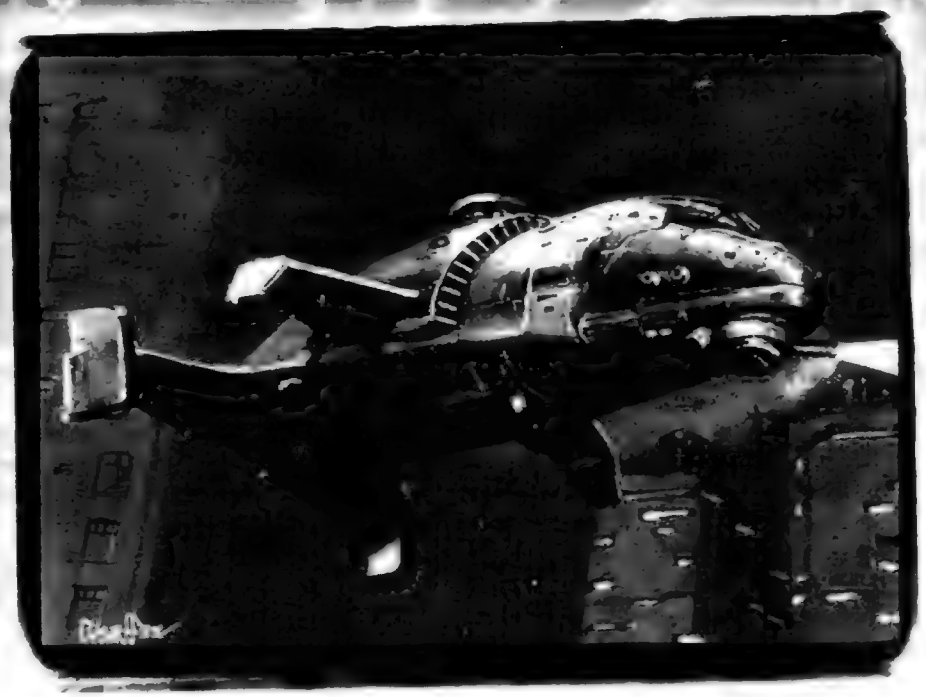
Also keep in mind that this rate is for Level 1 contacts and Friends of a Friend, to whom the character must also pay the initial contact fee, as well as labor charges. (See pp. 62–65, **SRComp,** for more information on Contact Levels and Friends of Friends.) Higher-level contacts will offer their services at reduced rates.

A Level 2 mechanic contact will charge the market labor rate (50 nuyen an hour) and waive the overtime surcharge, provided that the job doesn't impact too much on his free time (for example, don't ask him to give up his Friday nights or to wake up early on Saturday or Sunday morning).

A Level 3 mechanic will not only waive overtime, he'll also charge his buddy a discounted rate (25 nuyen an hour). Additionally, if the character has been really good to the mechanic (above and beyond the call of Level 3 contact upkeep) and the vehicle work will take only a day or two, the mechanic will do the job for free. (Gamemasters should grant this favor only if rigger players have been good with their roleplaying.)

STANDARD VEHICLE OPERATIONS





This section provides rules for all non-combat vehicle operations. (All you newbies out there should note that drones are considered vehicles, so the following rules also apply to directly and remotely controlled drones performing non-combat operations.) All rules provided in this chapter supersede previous vehicle rules published in **Shadowrun, Second Edition** and the **Rigger Black Book.**

THE DRIVING TEST

For convenience, simply assume that characters can automatically accomplish basic vehicle maneuvers, such as driving to the local Stuffer Shack or taking the old helicopter for a little sightseeing hop. Any time a character attempts a difficult maneuver, however—such as negotiating a hairpin turn at 100 kph or jumping a Yamaha Rapier over four lanes of rush-hour traffic—the character must make a Driving Test to determine whether he successfully accomplishes the task.

The Driving Test is a Complex Action. (See **Vehicle Combat,** p. 45 for rules on actions that riggers can take during a Combat Turn.)

To make a Driving Test, the player character uses his most appropriate Vehicle Skill. In addition, the player can add a number of dice equal to the vehicle's Autonav Rating (every autonav system contains collision-avoidance and defensive-driving programs). If the vehicle is rigged, the character also can add a number of Control Pool dice equal to the character's skill rating.

The base target number for the test is the vehicle's Handling Rating. Modify the base target number with all appropriate modifiers from the Driving Test Modifiers Table to determine the final target number.

DRIVING TEST MODIFIERS TABLE

Condition	Target Number Modifier
Unfamiliar vehicle	+1
Non-stressful situation	–1
Stressful situation	+3
Large vehicle of type	+2
Very large vehicle of type	+3
Weather conditions	
Bad	+2
Terrible	+4
Terrain	
Open	–1
Normal	0
Restricted	+1
Tight	+3
Action performed during combat	+2
Non-rigger driving using datajack	–1
Rigger in control	–(VCR Level x 2)

DRIVING TEST MODIFIERS TABLE KEY

Unfamiliar vehicle: If a character is operating a type of vehicle that he does not regularly operate, the unfamiliar vehicle modifier applies. The gamemaster determines whether a character is unfamiliar with a particular vehicle type.

Large/very large vehicle of type: If a character is operating a vehicle that is heavier or larger than the average vehicle of its type, the large/very large vehicle modifier applies. For example, the large-vehicle modifier would apply if a character is using the Car Skill for a Driving Test when driving a van. If the character were using the Car Skill to operate a truck, the very-large-vehicle modifier would apply. The gamemaster determines which modifier applies.

Weather conditions: Rain, snow, heavy winds and other common adverse weather results in Bad conditions. Hurricanes, blizzards, thunderstorms (for aircraft) and other severe weather (including storms caused by nature spirits) result in Terrible conditions.

Terrain: The terrain modifier reflects the type of terrain in which the character is operating the vehicle, according to the following terrain definitions. **Open** terrain refers to flat areas without buildings, trees, or other significant features; this type of terrain includes highways. Open terrain for aircraft is cloudless skies, and for boats, smooth water. **Normal** terrain refers to typical countryside and winding roads that offer only a few obstacles. Normal terrain for aircraft is partly cloudy skies, and for boats, light seas. **Restricted** terrain refers to suburban streets, light woods, hilly areas and so on. Fog, rain or total darkness can change Normal terrain to Restricted. Restricted terrain for aircraft is overcast skies and rain, and for boats, high seas. **Tight** terrain refers to urban mazes, badlands and dense woods. Mist, glare or low light changes Restricted terrain to Tight, and smoke, heavy fog or total darkness change Normal terrain to Tight. Tight terrain for aircraft and boats is high winds.

See page 35 for definitions of terrain for air-cushion vehicles (hovercraft).

Actions performed during combat: This modifier applies if the character is performing a standard vehicle action (such as landing an aircraft, stopping a car at a certain location and so on) under gunfire or in a combat situation. Note that a successful Driving Test does *not* guarantee that the vehicle evades weapons fire while performing the action. In addition, Control Pool dice allocated for the Driving Test cannot be used for resisting damage and vice versa.

This modifier does not apply if the vehicle is performing vehicle combat actions (see p. 45).

Non-rigger driving using a datajack: This modifier applies if the character is driving using a datajack but does not have vehicle control rig cyberware. Likewise, the modifier applies if a rigger is driving a vehicle not adapted for rigger control. Control Pool dice are not available if the vehicle is not rigged.

Rigger in control: The rigger-in-control modifier applies if the character has VCR cyberware and the vehicle is adapted for rigger control. In this case, *reduce* the target number by an amount equal to twice the VCR Rating.

Whiz Kid is a rigger and has a Rating 1 vehicle control rig. He's also into aircraft, helos to be exact, and he's got a Rotor Skill of 4 and a Fixed-Rotor Concentration of 6. That means he can operate any fixed-rotor aircraft—whether jacked in, via remote or by manual control—at a skill rating of 6.

When Whiz Kid's Ares Dragon helicopter (Handling 5, Autonav 2) hits a sudden squall, he decides to land before the weather gets worse. Based on the conditions, the gamemaster decides that Whiz Kid needs to make a Driving Test to land the chopper.

The target number for the test would be calculated as follows:

Base Target Number = vehicle's Handling Rating	*5*
Unfamiliar vehicle (Whiz has never flown a Dragon before)	*+1*
Non-stressful situation (trying to land)	*–1*
Large vehicle (the Ares Dragon is big)	*+2*
Bad conditions (the squall)	*+2*
Rigger in control (VCR Rating 1)	*–2*
Final Target Number	***8***

Whiz Kid uses 8 dice for the test (6 for his Concentration and 2 for the Dragon's Autonav). Whiz Kid decides not to add any Control Pool dice, because he's saving those for picking up his teammates from a combat zone once the squall blows over.

The Driving Test produces the following results: 1, 2, 3, 3, 5, 6, 6 and 6. Re-rolling the three sixes, he gets a 1, 1 and 4, for a final result of 1, 2, 3, 3, 5, 7, 7 and 10. The last die saves his butt, because it gives him one success. Whiz Kid puts the Dragon down safely.

VEHICLE ATTRIBUTES

The following definitions of the **Shadowrun** vehicle attributes replace the previously published definitions (p. 104, **SRII**). Note that not all attributes apply to all vehicle types; those attributes that apply only to certain vehicle types are noted as such in the description.

Unless otherwise noted, all the rules mentioned in these descriptions apply to both rigger and non-rigger characters.

For a complete list of vehicles, see the **Vehicles List,** p. 148.

HANDLING

Handling refers to the maneuverability of a vehicle and how easily a character can control it. The higher the rating, the more difficult a vehicle is to control.

The Handling Rating functions as the base target number for all Driving Tests that use a Vehicle Skill. Most ground vehicles have two separate Handling Ratings: the first represents the vehicle's Handling Rating on a road, while the second represents its Handling in off-road terrain.

Whenever ground vehicles are traveling across anything other than a paved surface, they are considered to be traveling in off-road terrain. Off-road terrain is a subcategory of the standard terrain types (Open, Normal, Restricted and Tight).

Any ground vehicle moving in off-road terrain reduces its Speed Rating by half, unless the vehicle possesses off-road suspension (see **Vehicle Design,** p. 125).

SPEED

The Speed Rating represents the maximum safe Speed at which a vehicle can travel for a sustained distance. This speed is expressed as meters per Combat Turn.

Fixed-wing aircraft have two Speed Ratings. The lower rating represents the aircraft's stall speed, the minimum speed the aircraft must maintain to keep flying.

To convert a vehicle's Speed Rating from meters/Combat Turn into kilometers per hour, multiply the rating by 1.2. To convert a Speed Rating to miles per hour, multiply the rating by 0.75.

Exceeding the Speed Rating

Vehicles may exceed their Speed Ratings by up to 1.5 times the rating, but doing so creates extra wear and tear on the vehicle that can increase the chance of spontaneous system failures. (See **Stress,** p. 25, for more information.)

ACCELERATION

The Acceleration Rating measures how quickly a vehicle can increase its speed within a given period. This attribute is used when vehicles are fleeing from or pursuing other vehicles during vehicle combat. In such cases, a character can make a Driving Test to boost his Speed. Each success generated on the test increases the vehicle's Speed by its Acceleration Rating.

Chazz the Spazz is flying along on his BMW Blitzen 2050 trying to escape from some Lone Star goons chasing him. He's going along at 50 mpt (meters per turn), but the goons are getting closer so he decides to accelerate (the Blitzen has an Acceleration Rating of 14). Chazz generates 2 successes on his Driving Test, which provides him with a Speed Rating increase of 28. That means the Blitzen accelerates from 50 mpt to 78 mpt as it enters the next Combat Phase.

Decelerating

According to the way things work in the real world, objects take a certain amount of time to stop moving, based on their speed and mass. A vehicle can brake or otherwise decelerate safely as long as the vehicle's deceleration within a single Combat Turn does not exceed its Acceleration Rating multiplied by 4.

If the vehicle's rate of deceleration exceeds this limit, the controlling character must make a Body Resistance Test. The base target number for the test is 3. For every 20 meters per turn (or portion thereof) by which the vehicle exceeds the safe deceleration limit, increase the target number by 1.

For every two dice results that do not exceed the target number, increase the vehicle's Stress by 1. On a roll of all 1s, the driver loses control in a skid and must make a Crash Test (see p. 51).

For more information on Body Resistance Tests, see **Vehicle Damage,** p. 49.

Chazz the Spazz is whizzing along at 78 mpt when the gamemaster tells him that the bridge directly ahead of him is out.

Chazz slams on the brakes. The Blitzen has a safe deceleration limit of 56 mpt (Acceleration Rating 14 multiplied by 4), so if he stays within that limit the Blitzen will still be traveling at 22 mpt when it hits the space where the bridge used to be.

A fall from the bridge would hurt much more than any damage that some hard braking will do to the bike, so Chazz decides to decelerate to 0 mpt. That requires a Body Resistance Test, which Chazz makes against a Target Number of 5 (base Target Number 3 plus 2 because the Blitzen is traveling 22 mpt above its safe deceleration limit).

BODY

A vehicle's Body Rating represents its mass and measures how much punishment it can take, whether from weapons fire or just plain hard driving. The Body Ratings Table lists Body Ratings for vehicles of various types and weights. For rules on using the Body Rating in game play, see **Vehicle Damage,** page 49.

Body Rating and Weapon Mounts

A vehicle's Body Rating also indicates how many weapons can be mounted on the vehicle. Every hardpoint mount installed on the vehicle takes up 2 Body Rating points. Every firmpoint installed on the vehicle takes up 1 point.

For example, a vehicle with a Body Rating 3 can have a single hardpoint mount and a single firmpoint mount or it can have 3 firmpoints. For more information on weapon mounts, see **Vehicle Weapon Mounts,** page 131.

BODY RATINGS TABLE

Vehicle Type	Weight	Body Rating
Very small, hand-held drones	0–5 kg	0
Small (toaster-sized) to medium drones	6–25 kg	1
Large drones, remote patrol vehicles, motorcycles	26–199 kg	2
Automobiles (including pickup trucks), motorboats under 30 feet long, single-engine airplanes	200–750 kg	3
Vans and light trucks, small yachts (30–40 feet), standard helicopters	751 kg–2 tons	4
Medium and heavy trucks, large yachts (more than 40 feet), Lear jets and twin-engine airplanes	2–5 tons	5
Tractors, cargo helicopters, riot-control vehicles, LAVs	5–20 tons	6
Wheeled armored personnel carriers, fighter aircraft	21–30 tons	7
Tracked armored personnel carriers	31–45 tons	8
Light tanks, tugboats, passenger airliners	46–60 tons	9
Main battle tanks; Coast Guard cutters; spacecraft	60+ tons	10+

Damage Reduction

The very nature of a vehicle reduces the damage level of all weapons attacks by one level (except for those weapons firing munitions specifically designated as anti-vehicle munitions). For example, an attack from an Ares Predator (Moderate damage) would be reduced to Light damage. This means weapons that inflict only Light damage cannot affect vehicles. For more information, see Vehicle Damage from Weapons, p. 53.

ARMOR

Armor is the rating for a complete composite armor that provides protection to the vehicle against all weapons fire (see **Vehicle Combat,** p. 53).

Vehicle armor works in two distinct ways. First, the Armor Rating functions as the Barrier Rating of the vehicle. This means that the armor of a vehicle can absorb an amount of damage from a weapon's unmodified Power equal to the Armor Rating. For example, if a vehicle has an Armor Rating of 6, no weapon with a Power Rating of 6 or lower could penetrate it; firing at the vehicle with a Uzi III (6M damage) gets you a bunch of sparks for your effort and no actual effect.

Against fire from a weapon with a Power Rating that exceeds the armor's rating, the armor acts like standard ballistic or impact armor and reduces the Power of the attack. For example, armor with a rating of 6 will reduce the Power of fire from an Ares Predator (9M) to 3M.

Vehicle armor provides no protection against impact damage from collisions. (See the explanation of Body in **Vehicle Damage,** p. 49.)

SIGNATURE

Signature indicates a vehicle's vulnerability to electromagnetic or thermal detection and serves as the target number for sensor and missile to-hit tests made against the vehicle.

Signature, however, does *not* represent the vehicle's vulnerability to target designators, such as laser and microwave targeting devices (see p. 60, **Fields of Fire**). Characters use standard ranged combat rules when targeting vehicles with such devices.

AUTONAV

The Autonav Rating represents the vehicle's collision-detection and navigation system. This rating replaces the Autopilot Rating.

During game play, a vehicle's Autonav Rating provides extra dice a character can add to Driving Tests made while performing only non-combat maneuvers. A vehicle's autonav system actually impedes the controlling character's ability to perform combat maneuvers. (See **Vehicle Actions**, p. 45.)

Note that the autonav system merely serves as a driver's assistant. It can make minor control adjustments to avoid collisions and navigate a course, but it cannot perform any other autonomous control functions.

PILOT

The Pilot Rating indicates a drone or robot's autonomous decision-making capability (more commonly known as the "dog brain"). Drones with high Pilot Ratings can "understand" and execute more complex commands than those with lower ratings.

A drone's Pilot Rating applies when no rigger is controlling the drone. In such circumstances, the drone's Pilot Rating is substituted for the rigger's relevant skill for any required test.

For more information, see **Issuing Commands,** p. 66 in **Drones.**

SENSOR

A vehicle's Sensor Rating determines the base number of dice used in the vehicle's Perception Tests. The Sensor Rating may also add dice to Gunnery Tests for attacks with certain types of vehicle weapons (see **Sensor Enhanced Gunnery,** p. 58).

The Sensor Rating represents the vehicle's target-detection (knowing a target exists), target-identification (knowing what the target is), and targeting systems (locking weapons on to a target), as well as the vehicle's radio transponders for position-locating systems such as GPS or ALI.

If a vehicle has an autonavigation system (an Autonav Rating), it automatically has a Sensor Rating of 0 or higher. Currently, no **Shadowrun** vehicles without autonav are equipped with sensor systems, so a vehicle without autonav has no Sensor Rating.

CARGO FACTOR

A vehicle's Cargo Factor (CF) indicates how much space is available in the vehicle for cargo such as baggage, vehicle modifications or other material.

One point of CF is equivalent to a cube of space one half meter long on each side (0.125 cubic meters).

A vehicle's CF limits the types and ratings of certain modifications (such as vehicle armor and weapons) that can be added to a vehicle. See **Weight and Space Restrictions,** p. 118, for more information.

LOAD

Load represents the amount of cargo weight a vehicle can lift, pull or carry. Load does not include passengers, except for in unusual circumstances (such as sasquatches or the troll-variant giants described on page 41 of the **Shadowrun Companion**).

A vehicle's Load limits the types and ratings of certain vehicle modifications (such as vehicle armor and weapons) that can be added to a vehicle. See **Weight and Space Restrictions,** p. 118, for more information.

SEATING

The Seating code denotes the seating capacity of a vehicle. The order of numerals in the Seating code indicates the arrangement of seats in the vehicle. For example, a Seating code of "2 bucket + 2 bucket + 2 bench" indicates that the front of the vehicle contains two bucket seats, the middle contains two bucket seats and the back of the vehicle contains two bench seats.

ENTRY POINTS

Similarly, the Entry points code of a vehicle indicates the number and arrangement of entry/exit points in the standard model of the vehicle. An Entry point code of "2 + 1" indicates two access points in the front or top of the vehicle and one access point in the rear or bottom of the vehicle.

FUEL

A vehicle's Fuel code describes the type of fuel the vehicle uses and the size of its fuel tank. A two-part Fuel code that lists two fuel types and two tank capacities indicates that a vehicle uses two different fuel sources. In such cases, the first fuel type listed is the vehicle's primary fuel.

For information on Fuel rules, see **Vehicle Design and Customization,** page 112.

SET-UP/BREAKDOWN TIME

Set-Up/Breakdown Time is the time needed to configure a drone for operation and break the drone down for storage. One Combat Turn must be spent activating a drone after it has been configured, regardless of the drone's Setup/Breakdown Time.

LANDING/TAKEOFF (L/T) PROFILE

A fixed-wing aircraft's Landing/Takeoff Profile describes the minimum runway distance the aircraft needs to take off and land. Landing/Takeoff Profiles are divided into four categories: Normal, STOL (Short Takeoff/Landing), VSTOL (Very Short Takeoff/Landing), and VTOL (Vertical Takeoff/Landing). See **Aircraft,** page 36, for more information.

ECONOMY

Economy indicates how far a vehicle can travel on a given amount of fuel. Drones have a subrating under the Economy heading, called Idle Economy. This rating reflects how much fuel a drone consumes during a given period while idling in position. For more information on Economy, see **Variable Fuel Consumption,** p. 81.

SPECIAL VEHICLE ATTRIBUTES

The following vehicle characteristics apply to vehicle operations, but do not appear in the standard vehicle statistic profiles.

ED/ECD

A vehicle's electronic-deception (ED) systems emit signals that fool sensors into misjudging the position, speed, heading or characteristics of the vehicle. ED increases the Signature of the vehicle for Sensor and Gunnery Tests made against it, but detecting ED is much more difficult than detecting ECM.

A vehicle's electronic counter-deception (ECD) systems consist of reality-checking electronic circuitry that counters the subtle signals of ED. ECD counteracts the modifiers imposed by ED.

For more information on the use of ED and ECD, see **Sensors,** page 32.

ECM/ECCM

Electronic countermeasures (ECM) systems "attack" remote-control networks by jamming their frequencies and degrading the quality of their transmission signals. However, a vehicle's ECM systems increase its Signature for certain Gunnery Tests made against the vehicle.

Electronic counter-countermeasures (ECCM) systems counteract the effects of ECM systems for the purposes of Gunnery Tests. A drone may also use ECCM to reduce the Power of ECM jamming attempts made against it.

See **Sensors,** page 31, for more information on ECM and ECCM systems.

FLUX

A vehicle's Flux Rating represents the ráw electrical power available for its remote control decks, sensors and electronic warfare systems.

The Flux Rating determines the effective range of each system, as well as the number of dice used to resist electronic warfare effects.

LEARNING POOL

The Learning Pool provides robots with dice they can use when performing actions on their own. For more information, see **Robots,** page 67.

MANEUVER SCORE

The Maneuver Score is a variable rating used during vehicle combat. It reflects the abstract tactical position a vehicle occupies in relation to other vehicles and is based on the following factors: the vehicle type, its current speed, terrain and the results of an open-ended Success Test made by the driver.

For more information, see **The Maneuver Score,** page 41.

STRESS

The Stress Rating is used to simulate the effects of wear and tear on vehicles. Each time a character pushes a vehicle beyond its normal performance capabilities or loses control of a vehicle, the vehicle's Stress Rating increases. And each time the Stress Rating of a vehicle increases, the chances of spontaneous vehicle breakdowns or system failures increase.

INCURRING STRESS

All new vehicles start with a Stress Rating of 0. (If a character obtains a used vehicle, it may have a higher Stress Rating. The gamemaster determines the exact rating.)

A character's vehicle may incur Stress Points in two ways. First, the character may intentionally push the vehicle beyond its normal performance capabilities by pushing the vehicle beyond its normal Speed Rating or using extra dice for Driving Tests. Second, a vehicle may incur Stress if its driver fails a Driving Test according to the parameters of the Stress Rule of One, as described on page 26.

Breaking the Speed Limit

A vehicle's Speed Rating indicates the maximum *sustained* speed the vehicle can handle without incurring damage. An aggressive driver can coax a vehicle up to 1.5 times its Speed Rating, but any time a vehicle exceeds its Speed Rating, it incurs 1 Stress Point.

Extra Dice for Driving Tests

A character can improve his chances of success on any Driving Test by adding extra dice to his roll in exchange for intentionally incurring Stress Points. For every 2 Stress Points, the character may add 1 additional die to his Driving Test.

For vehicles with Body Ratings of 1, controlling characters can intentionally inflict 2 Stress Points for 1 additional die.

For all other vehicles, the number of Stress Points intentionally inflicted during a single action may not exceed the vehicle's Body Rating.

Stress Rule of One

Any time a character really botches a Driving Test, his vehicle may incur Stress Points. A vehicle incurs 1D6 Stress Points whenever the number of 1s rolled on a Driving Test equals or exceeds the driver's Vehicle Skill.

STRESS AND SYSTEM FAILURES

Stress may cause vehicle system failures in three circumstances.

First, system failure may result whenever a vehicle incurs Stress from the Stress Rule of One. If the vehicle's Stress Rating increases to twice the vehicle's Body Rating or greater, one major vehicle system (brakes, steering, transmission and so on) automatically fails. The gamemaster chooses the system that breaks down. The character must make a Crash Test to avoid crashing. (See **Crashing**, p. 51.)

System failure may also occur whenever a driver fails a Driving Test. In this case, the gamemaster makes a Stress Test for the vehicle by rolling 2D6 against the vehicle's Stress Rating. If the result is less than the vehicle's Stress Rating, one major vehicle system suddenly fails, and the driver must make a Crash Test to avoid crashing.

Furthermore, the gamemaster may call for a Stress Test any time the vehicle is running.

While running from the local corporate heat, Rigger X tries to negotiate a hairpin turn down a narrow alley.

Rigger X has no Control Pool dice available for the required Driving Test, so he decides to gain some extra dice by intentionally inflicting Stress Points on his Eurocar Westwind. The Westwind has a Body Rating 3, so Rigger X can inflict only 2 Stress Points, which gains him only 1 additional die.

Rigger X's player rolls the dice and fails the Driving Test. The gamemaster makes the required Stress Test and produces a result of 4. That result is lower than the Westwind's Stress Rating of 2, so the Stress Test produces no effect.

However, Rigger X's failed Driving Test produced five 1s, which equals his Car Skill of 5, so the Stress Rule of One applies. The gamemaster rolls 1D6 and generates a result of 4, which increases the Westwind's Stress Rating to 6. The new rating of 6 is equal to twice the Westwind's Body Rating of 3, so the sports car automatically suffers a system failure.

The gamemaster decides that one of the Westwind's tires blows out as the car makes the hairpin turn, and Rigger X must now make a Crash Test to keep the sports car from slamming into the alley wall.

Reducing Stress

A vehicle's Stress Rating may be reduced only through a thorough maintenance overhaul in a Vehicle Facility (see pp. 244, 259 in **SRII**).

To perform a maintenance overhaul, the vehicle's controlling character makes a Build/Repair Test against a target number equal to the vehicle's Stress Rating plus 4. Every two successes reduce the Stress Rating by 1. The Stress Rating cannot be reduced lower than 1—once you push a vehicle beyond its limits, it never performs as well as it did before.

A maintenance overhaul costs 50 nuyen in replacement parts for each Stress Point removed, plus labor costs, if the work was performed by a mechanic.

REPAIRING VEHICLES

Repairing vehicles is a two-step process that consists of a Vehicle Build/Repair Test and buying any needed replacement parts.

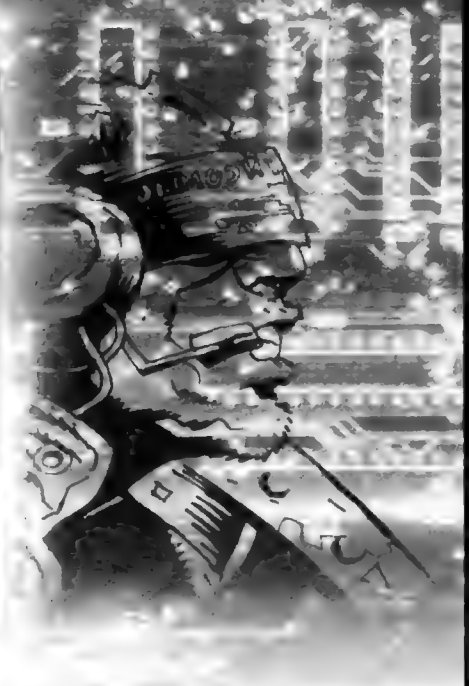
The target number for the Vehicle Build/Repair Test is the number of damage boxes on the vehicle's Condition Monitor which the character wishes to repair, plus 2. The base time for repair is 16 hours per box of vehicle damage. After making the test, divide the base time by the number of successes. The result is the amount of repair time required to repair the damage.

To determine the cost of replacement parts, multiply the number of damage boxes by 5. The resulting figure is the parts cost, expressed as a percentage of the total vehicle cost (including modifications). For example, the parts cost for a vehicle with the Light damage box filled on its Condition Monitor would be 5 percent of the vehicle's total cost (multiply the cost times .05).

Replacement parts have the same Availability Codes and Street Indexes as the vehicle under repair. Characters use their Vehicle Build/Repair Skills to make Acquisition Tests to obtain parts. Repairs cannot start until the parts show up, so the characters have to wait the full Availability time before commencing with repairs.

Once the character/mechanic obtains the parts, repair work gets underway. Repair work takes the full repair time (as determined by the initial Vehicle B/R Test). During this time the vehicle is completely unavailable for use. If, for some reason, the character needs the vehicle back, the mechanic must spend an additional hour putting the vehicle back together and returning it to some kind of operational condition. (This hour does not count toward the repair time). Once the character is done using the vehicle and returns it for repair, the repair time resumes at the point it left off.

SENSORS



Sensors are the primary—heck, the *only*—method a rigger has of perceiving the world beyond her vehicle. She uses them to see, hear and feel; through them, she is aware of and can identify various elements in the environment surrounding the vehicle, from the pedestrian at the crosswalk to the security guard on patrol to the cop car screaming down the street. A rigger can use sensors to identify and attack targets kilometers away, visually monitor two different locations at the same time, or catch a crooked corp operator on chip.

A vehicle's Sensor Rating measures the overall capability of a vehicle's sensors to detect other objects. The rating determines how many dice the vehicle's controlling player may use for Sensor Tests and also the components included in the vehicle's sensor systems.

SYSTEM COMPONENTS AND SENSOR RATINGS

Sensor systems include numerous components, depending on the overall Sensor Rating. Rating 0 sensors include rangefinders and ultrasound and laser proximity detectors. Rating 1 sensors include proximity detectors, rangefinders, video (but not trideo) cameras, basic radar, signature-recognition software and low-light and telescopic magnification. Sensors rated 2, 3 and 4 include all of those components plus thermographic imaging. And Rating 5 or higher sensors include all components previously mentioned plus flare compensation.

All sensors include magnification power equal to 50 times the sensor rating.

ADDING/UPGRADING COMPONENTS

Sometimes a character may want to upgrade or add a specific sensor component (for example, installing flare-compensation sensors to a Rating 4 or lower sensor system, or boosting a sensor system's telescopic magnification).

The parts cost for such upgrades is equal to the original cost of the sensors times .10, multiplied by the number of levels the player intends to boost the system for the upgrade. Sensor costs appear in **Vehicle Design and Customization** on page 140.

Skyrie needs to add 100x magnification capacity to her spotter drone's Level 1 sensors. Skyrie's a little short of cash right now, so she decides to upgrade only the magnification rather than the entire sensor system.
The base price of the spotter's Level 2 sensors is 15,000 nuyen. Skyrie wants to boost the vision-magnification subsystem by 2 levels, so the cost of the upgrade is 3,000 nuyen (15,000 x .10 = 1,500; 1,500 x 2 = 3,000).

IMAGE TRANSMISSIONS

All Level 1 and higher sensor systems can transmit and record audiovisual footage. Footage can be stored as datafiles (which requires onboard memory or a computer), recorded on chips (which requires a video-recording unit) or transmitted to a remote station (which requires a remote-control linkup). Onboard computers and video recorders must be hooked into electronics ports (see **Electronics Port**, p. 139).

Audio/video clips take up 2 megapulses of memory per minute of recording. Audio-only or video-only recordings consume 1 megapulse per minute. Recorded footage may be enlarged up to Sensor Rating x 20 magnification before the chip image loses image quality. Note that sensor systems transmit in two-dimensional video images, not trideo images.

Ace, a shadowsnoop reporter, has hired a rigger to conduct surveillance on Mr. Bigg, a crooked politico Ace hopes to expose in a big story. Ace's rigger uses a roto-drone with Level 2 sensors and an onboard palmtop-sized microcomputer unit to monitor Bigg through a hotel window.

Ace wants both audio and video proof, and the microcomputer unit has 150 Mp of memory. Each minute of audio/video footage consumes 2 megapulses of memory, so the microcomputer can record up to 75 minutes of audiovisual footage.

Several hours later, Ace meets with the rigger to see what he's captured. While reviewing the footage, Ace notices a small object lying atop the dresser in Bigg's room. He enlarges the video. The maximum enlargement Ace can get of the object is 40x the size of the image before the image loses quality.

Now, had Ace been with the rigger and noticed the object during real-time surveillance, the rigger could have used the sensors' 50x magnification power. That would have enabled Ace to reveal the 500,000¥ bribe on Mr. Bigg's cred reader—which just goes to prove that reporters who don't slog through stakeouts miss out on the big stories.

Gamemasters running media campaigns (see p. 114, **SRComp**) should note that vehicle sensor systems were originally designed for purposes other than news reporting. Consequently, footage obtained from sensor feeds tends to be less sharp than footage recorded on high-resolution portacams. Therefore, sensor footage used in Perception Tests adds a +1 target modifier to the test.

SENSOR TESTS

To determine if a vehicle's sensors detect another vehicle or object within the sensor's range, the controlling player makes a Sensor Test. (See **Sensor and Remote Deck Ranges,** p. 30, for rules on determining sensor ranges.) The vehicle's Sensor Rating determines how many dice the player may use for the test.

The target vehicle's Signature is the base target number for the test. Apply any appropriate modifiers from the Sensor Test Modifiers Table.

The number of successes achieved on the test determines what information the Sensor Test produces, as described in the Sensor Test Results Table.

SENSOR TEST MODIFIERS TABLE

Condition	Target Number Modifier
ECM in use	Variable (see p. 31)
ECCM in use	Variable (see p. 31)
Direct LOS	–2
Urban Setting	+1
Fog/Smog/Precipitation	+1
Restricted Terrain	+1
Concealed by Spirit	+ Force
Tight Terrain	+2
Sensing Vehicle Damaged	+ Damage Modifier

SENSOR TEST MODIFIERS TABLE KEY

Direct LOS: LOS stands for line of sight. This modifier applies if an uninterrupted line of sight exists between the vehicle's sensors and the target objects.

Urban Setting: The Urban Setting modifier applies if the sensor or the target is located inside a built-up urban area. The modifier reflects the noise, heat and electromagnetic distortion that can hinder detection.

Fog/Smog/Precipitation: The presence of natural fog, smog or precipitation increases the difficulty of detecting objects.

Restricted Terrain: If the sensing vehicle or target is navigating through Restricted Terrain, detecting becomes more difficult.

Concealed by Spirit: If a nature spirit is concealing the target using the Concealment power, the target number increases by an amount equal to the spirit's Force Rating.

Tight Terrain: The Tight Terrain modifier applies if the sensor or target is traveling through Tight Terrain. The modifier reflects that fact that solid objects hinder sensor readings.

Sensing Vehicle Damaged: The Sensing Vehicle Damaged modifier applies if the sensing vehicle has suffered damage. The target number modifier is equal to the vehicle's current Injury Modifier as shown on the Damage Modifiers Table (**SRII,** p. 112).

SENSOR TEST RESULTS TABLE

Number of Successes	Result
0	No contact. The sensors do not detect the target.
1	Basic contact. The sensors detect the target object and determine its distance, direction of travel and speed. The sensors also identify the target's general type (a building, an aircraft, a ground vehicle, a biological life form and so on) but cannot provide further identification.
2	General contact. The sensors identify the target's general subtype (for example, a radar dish, a helicopter, a hovertank, a dragon and so on).
3	Positive contact. The sensors identify the target's specific type (for example, a XQ-137 Air Search Radar, a Hughes WQ-2 Stallion, an M24 Stuart IFV, a feathered serpent and so on).
4+	The sensors identify features that distinguish the target from others of its type.

SENSOR AND REMOTE DECK RANGES

Unlike firing ranges for weapons, which extend outward in a straight line, ranges for sensors and remote control decks work more like radar. They cover a 360-degree area of effect with the sensor or deck at the center.

The ranges of sensor systems and remote control decks are determined by the power output of the system's transmitter. The greater the transmitter power, the greater the system's effective range. At the same time, however, a higher power output produces a higher signature and increases the vulnerability of a vehicle or remote control deck to detection.

The power output of a vehicle's sensor system or a remote control deck is measured by the system's Flux Rating.

THE FLUX RATING

The Flux Rating (short for electromagnetic power flux) reflects the power output of transmitters used in communications gear, remote control nets, sensors systems, jammers, ECM and ED.

The Flux Rating Table shows the Flux Ratings for most electronic devices. The Flux Rating can be increased or decreased to boost the signal strength of a transmitter or decrease the electronic signature it produces.

FLUX RATING TABLE

Device	Flux Rating
Remote Control Deck	2
Sensors and ECM Devices	rating x 1.5 (round up)
Other electronic transmitters (such as radios)	Device rating
Cyberware	0

Changing Flux Ratings

Any electronic device can operate at a lower Flux Rating than its standard rating, down to a minimum of 0. Increasing the Flux Rating to greater than the default value, however, requires external modifications.

Electronic devices that are connected to a vehicle via an electronics port (see **Electronics Port**, p. 139) may draw extra electrical power from the vehicle's engine to boost their Flux Ratings. The maximum number of points a device's Flux Rating can be raised in this manner is equal to half the vehicle's Body Rating, rounded down.

A vehicle engine can provide boosts to multiple devices, but the total Flux Points of all simultaneous boosts may not exceed the vehicle's Body Rating.

Vehicle electronic devices may also draw extra Flux Points from signal amplifiers mounted on the vehicle. The rating of an amplifier determines how many Flux Points the amplifier can provide.

Josie Cruise likes to use her van, Rough Rider, as a command-and-control center. The van is outfitted with a remote-control deck (Flux 2), a radio (Flux 3), a sensor system (Flux 8) and ECM (Flux 2).

The van has a Body Rating of 4, so the van can provide no more than 4 Flux Points at any single time, and it cannot boost any single system by more than 2 points.

For example, Josie could use the van to provide a 2-point boost to the remote-control deck and 1-point increases to the van's sensor system and ECM. However, she could not provide 2-point boosts to all four systems.

In addition to computing effective ranges for sensors, communications gear and certain other electronic devices, Flux Ratings are also used when resolving electronic warfare (see **Electronic Warfare**, p. 68).

FLUX RATING AND RANGE

The range for any electronic transmitter (communications gear, remote control equipment, sensors, ECM and ED) is based on the transmitter's Flux Rating, as shown on the Flux Rating and Range Table.

FLUX RATING AND RANGE TABLE

Flux Rating	Range
0	250 meters
1	1 km
2	2 km
3	4 km
4	6 km
5	9 km
6	12 km
7	16 km
8	20 km
9	25 km
10+	(2 x Flux) + 10 km

Situational Range Modifiers

External circumstances can temporarily increase or decrease the range created by a standard Flux Rating. The modifiers in the Situational Range Modifiers Table are applied to a transmitter's Flux Rating before the effective range of the transmitter is computed. After determining the modified Flux Rating, round the result down to the nearest *half*, instead of to the nearest whole number.

SITUATIONAL RANGE MODIFIERS TABLE

Condition	Modifier
High elevation	+4
ECCM in use	–ECCM ÷ 2
Electrical storm	–2
Encryption in use	–0.5
Humid air	–0.5
Urban environment	–1

SITUATIONAL RANGE MODIFIERS TABLE KEY

High elevation refers to any situation in which an uninterrupted line of sight exists between the transmitter and its receiver or target. This modifier usually applies to aircraft in flight or land-based transmitters perched atop high elevations such as hills or skyscraper roofs.

ECCM in use refers to electronic counter-countermeasures, which defeat ECM by filtering out electronic garbage and boosting the signal strength of meaningful signals. Because ECCM also draws electrical power from the transmitter, subtract half the ECCM Level when determining the modified Flux Rating.

The **electrical storm** modifier applies whenever a thunderstorm or solar flares are active in the transmitter's area.

Encryption in use applies only to radios and remote control decks that are operating under encryption. In these cases, reduce the device's Flux Rating by half.

The **humid air** modifier is another environmental modifier. It applies to any transmitter operating during a particularly hot, humid and muggy day. This modifier may also apply to transmitters operating in areas that have an excessively high smog content (Los Angeles is a particularly good example). Do not use this modifier in conjunction with the **electrical storm** modifier.

The **urban environment** modifier applies to transmitters used in heavily built-up areas, such as downtown districts, industrial parks or any major non-residential area of a mega-sprawl. The modifier also applies if the transmitter is within 1 kilometer of a high-voltage power line.

Josie Cruise is using a CyberSpace Dalmatian recon drone to conduct some long-range snooping. She's operating the drone via a remote-control deck augmented with Rating 4 signal amplifiers (Flux 6, 12 km range), located on the roof of a fourteen-story parking garage. Josie's using a crypto-circuit encryption device on her deck, as well as Level 3 ECCM (her target really hates unwanted snoopers).

The effective Flux Rating for determining the range of her deck transmitter would be 8, calculated as follows.

Deck Flux Rating	*6*
High Elevation	*4*
Encryption	*–0.5*
ECCM	*–1.5*
Effective Flux Rating	*8*

*This effective Flux Rating gives Josie's Dalmatian an 8-kilometer increase in range to 20 kilometers (see **Flux Rating and Range Table**).*

ELECTRONIC COUNTERMEASURES (ECM)

Electronic countermeasures (ECM) generate a field of electromagnetic noise that jams radio and sensor electronic wave bands. In game terms, ECM increases the difficulty of targeting and locking on to an ECM-equipped vehicle. However, ECM does not hinder the ability of individual characters to fire weapons directly at a vehicle.

To determine the effectiveness of ECM, the targeted vehicle's character and the jamming vehicle's character make an opposed Success Test, known as an ECM Test. The jamming character rolls a number of dice equal to the Flux Rating of his vehicle's ECM suite; the test target number is equal to the Sensor Rating of the opposing vehicle. The targeted vehicle's character rolls a number of dice equal to the Flux Rating of his vehicle's sensors; the test target number is equal to the ECM rating of the targeted vehicle.

If the targeted character wins the test, no jamming occurs and the player can proceed with a Sensor Test. If the jamming character wins, increase the Signature of his vehicle by the number of successes generated on his test.

The ECM Test represents the interaction of electronic devices. Therefore, the test does not constitute an action by either character, and is performed outside of the Combat Turn sequence.

Turning ECM and ECCM on or off is considered a Simple Action.

If a single vehicle is attempting to use ECM, only the best die roll result applies. The effects are not cumulative. If one jammer is using its ECM against many different vehicles, make only one ECM Test and compare the number of successes against the Sensor Ratings of each of the other vehicles involved.

Riggers may use electronic counter-countermeasures (ECCM) to counteract ECM jamming. To do so, the two players make an opposed Success Test. The counterjammer rolls a number of dice equal to his vehicle's ECCM Rating against a target number equal to the ECM Rating of his opponent's vehicle. The jammer rolls a number of dice equal to his vehicle's ECM Rating against a target number equal to the ECCM Rating of his opponent's vehicle Each success that the counterjammer generates negates 1 success generated by the jammer on his ECM Test.

M.C. Jammer is running a shipment of arms across the border from San Angelo into Aztlan-occupied El Paso. As he nears the border in his t-bird (Signature 4), he turns on his ECM (Rating 3, Flux 10) because an Aztlan Aguilar attack helicopter (Sensor 7, Flux 8) is closing in.

Jammer's player rolls 10 dice (the t-bird's Flux) against a Target Number 7 (the copter's Sensor Rating) and generates 4 successes. The gamemaster rolls 8 dice (the copter's Flux) against a Target Number 3 (the t-bird's ECM Rating) and generates 2 successes. Jammer wins; the Signature Rating of the t-bird increases by 4, from 4 to 8.

In response to the cloud of snowy static surrounding his field of vision, the Aztlan pilot switches on his ECCM (Rating 4) to counter the ECM. The gamemaster rolls 4 dice (the copter's ECCM Rating) against a Target Number 3 (Jammer's ECM Rating). Jammer's player rolls 3 dice (ECM Rating) against a Target Number 4 (the copter's ECCM Rating). This time, the gamemaster generates 3 successes, while M.C. Jammer gets 2. The Aguilar's ECCM wins, and its single net success counters one of M.C. Jammer's successes from his ECM Test and reduces Jammer's Signature from 8 to 7.

ELECTRONIC DECEPTION (ED)

Electronic-deception (ED) systems produce subtle electromagnetic radiation which, when superimposed over sensor emissions, feed false or misleading signals to enemy sensors. For example, ED can fool a sensor into thinking the target is flying at a different speed or in another direction; additionally, ED can confound any attempts to identify the target by its Signature.

The ED optional rule is both a roleplaying device and a game mechanic. Because ED increases the Signature of the target, characters may find themselves in situations in which they can see the object that their sensors are misrepresenting. If a rigger suspects a discrepancy between what he sees or knows and what his vehicle's sensors are telling him, the gamemaster can allow the rigger to make a Perception Test against a target number equal to his opponent's ED Rating plus 4. Success confirms or denies the rigger's suspicions.

In terms of game mechanics, the player controlling the ED-equipped vehicle rolls a number of dice equal to the vehicle's ED Rating against a target number equal to the opposing vehicle's Sensor Rating (or the Intelligence Rating of a missile, if a missile has been fired at the ED-equipped vehicle). Each test success increases the ED-equipped vehicle's Signature by 1. ED systems are area-effect systems, and their ranges depend on the Flux Rating of the vehicle carrying them.

Electronic-counterdeception (ECD) systems use reality-checking measures, such as dead-reckoning navigation and power-attenuation monitors, to negate the effects of ED systems. Like its cousin ECCM, ECD affects specific vehicles rather than a general area.

Activating or deactivating ED or ECD is considered a Simple Action.

To determine the effectiveness of ECD, the player rolls a number of dice equal to his vehicle's ECD Rating against a target number equal to the targeted vehicle's ED Rating. Each success on the ECD Test negates one success from the ED Test. ECD does not work against standard ECM.

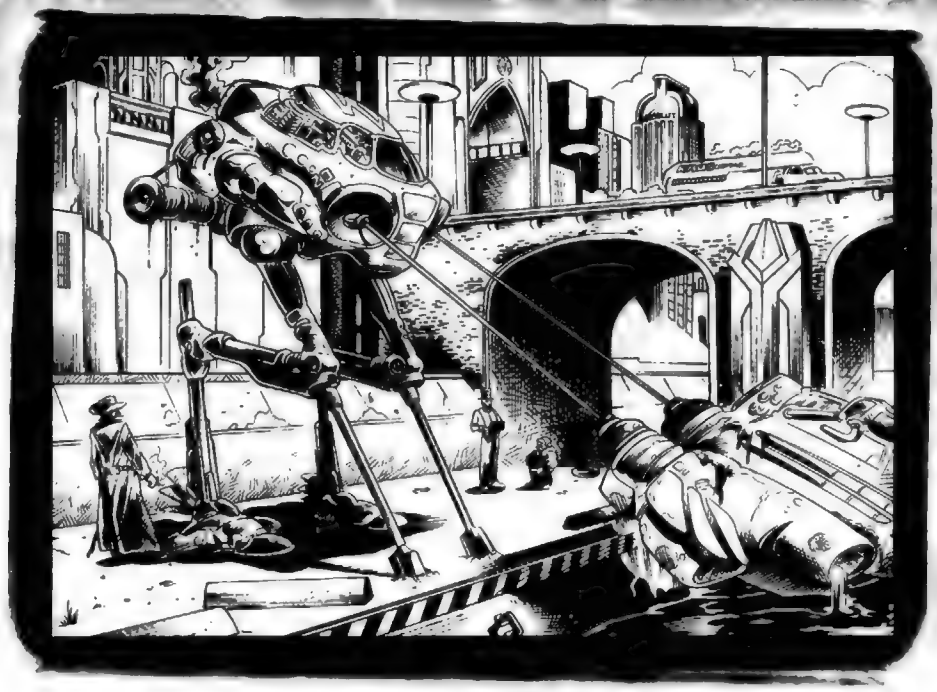
Because ECD works by filtering out ED emissions, ECD drains power from a vehicle's electronic transmitter, thus reducing the effective ranges and resistance to jamming of the vehicle's sensors. To reflect this, subtract the vehicle's ECD Rating from its Flux Rating.

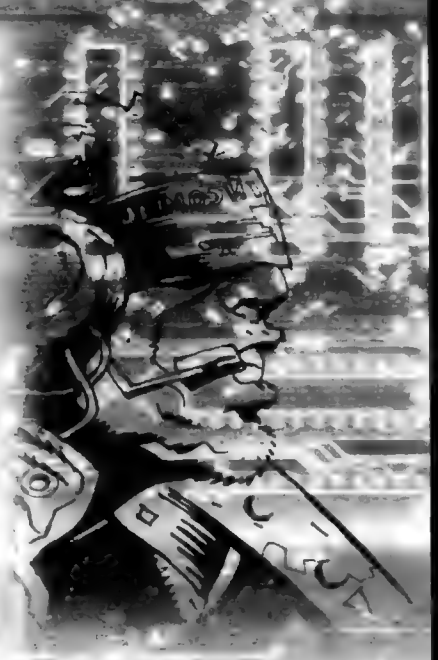
Monkeywrench has been hired to capture the elusive rigger Mirage. For the past six hours he's camped out by Gravelly Lake in Fort Lewis in his vehicle (Sensor Rating 4), waiting for Mirage to pass overhead on her run into Tacoma. As Mirage flies over in her helicopter Shadowstorm (Signature 3, ED Rating 5), Mirage's player secretly rolls 5 dice against a Target Number 4 (the Sensor Rating of Monkeywrench's vehicle). She scores 4 successes, which boosts the copter's Signature from 3 to 7 (but the gamemaster doesn't tell Monkeywrench's player that).

Meanwhile, Monk picks up something through his vehicle sensors. He makes a Sensor Test to try to identify the object. The Target Number for the test is 7 (the helicopter's modified Signature, though the gamemaster keeps that a secret from Monkeywrench). Monk's test generates no successes, so his sensors detect only a small flying object—much too small to be a copter. Consequently, Monk goes back to watching the sky. He doesn't realize he's been tricked until he sees Mirage's copter flying past him.

If Monkeywrench had activated his vehicle's ECD, his sensors might have correctly identified his elusive quarry before it was too late.

SPECIAL VEHICLE OPERATIONS





The following rules are designed to resolve the use of unique or special vehicle operations, the use of special vehicle features such as mechanical arms and legs, and the use of vehicles such as air-cushion vehicles.

LIFTING AND PULLING OBJECTS

Only vehicles or drones equipped with a crane, winch or boom can lift objects, but any vehicle can pull an object along the ground, provided the object is attached to the vehicle with a tow bar, cables or some other device.

A vehicle or drone can safely lift or pull any object whose weight does not exceed the vehicle's Load Rating. Two or more vehicles can safely pull or lift a weight equal to the sum of their Load Ratings.

VEHICLE PULL TESTS

Vehicle Pull Tests reflect a vehicle's capacity to lift or pull objects that weigh up to two times the vehicle's Load Ratings for short distances (less than half a kilometer). For example, use a Pull Test for such situations as a truck recovering a vehicle that is half buried in mud, using a vehicle's winch to pull the vehicle up a particularly steep cliff, a tugboat trying to dislodge a barge marooned on a sandbar and so on.

A Vehicle Pull Test consists of a Body Test for the vehicle made against the appropriate target number from the Pull Test Target Numbers/Modifiers Table. Players may also intentionally incur Stress Points to add extra dice for Pull Tests (see **Stress,** p. 25). If the Pull Test fails, the vehicle fails to lift or pull the object. However, the vehicle still incurs Stress and suffers other applicable side effects (see **Pull Test Side Effects,** p. 34).

PULL TEST TARGET NUMBERS/ MODIFIERS TABLE	
Object Weight	**Target Number**
0 to 1 x Load Rating	3
1.1 to 1.5 x Load Rating	5
1.6 to 2 x Load Rating	8
Condition	**Target Modifier**
Bad conditions	+1
Terrible conditions	+3
Object stuck in ground	+1 to +4
Pulling without rollers (ground)	+4
Vehicle reinforced in place	–2

PULL TEST TABLE KEY

Bad conditions: Muddy roads, moderate rolling slopes and similar terrain constitute bad conditions for ground vehicles. In addition, inclement weather, such as rain or snow, may create bad conditions on level ground and dirt roads.

For aircraft, bad conditions include moderate cross winds, snow, rain or other precipitation. For boats pulling barges or floating objects, bad conditions include rough, moderately choppy waters.

Terrible conditions: Mud pits, quicksand, steep cliffs, marshes or flooded ground constitute terrible conditions for ground vehicles. In addition, inclement weather can transform normally bad conditions (see above) to terrible conditions. Severe weather, such as blizzards, severe thunderstorms or weather whipped up by a great nature spirit using its Storm power, can create terrible conditions in any terrain.

Terrible conditions for aircraft include severe storms, gale-force winds or rushing vertical air drafts. For boats, terrible conditions consist of storm-tossed waves.

Object stuck in ground: This modifier applies if the object being pulled or lifted is partially rooted or buried in the ground. The gamemaster sets the exact value of the modifier, based on how deeply the object is buried in the ground. For example, a Pull Test made to free a truck that is axle deep in mud would receive a +1 target modifier, while a test for a truck sunk halfway in soft earth would receive a +4 modifier.

Pulling without rollers: This modifier applies when a ground vehicle attempts to pull an object across the ground without some sort of rolling support (such as wheels) under the object. However, the gamemaster may waive this modifier if he judges that the ground is slick enough for frictionless pulling (such as an oil-covered or icy surface).

Vehicle braced in place: This modifier applies if a ground vehicle is braced with posts or some other device that prevents it from slipping. Bracing a vehicle or removing such braces takes 1 turn. Note that a braced vehicle is completely immobile.

PULL TEST SIDE EFFECTS

Though successful Pull Tests enable vehicles to lift or carry a weight greater than their Load Ratings, the effort of doing so reduces the vehicle's Speed Rating during the action and inflicts Stress on the vehicle. These effects are described in the Pull Test Side Effects Table.

In addition, any time a vehicle lifts or pulls a weight greater than 1.5 times its Load Rating, the vehicle may incur an extra Stress Point. In such cases, the controlling character must make a Body (4) Test for the vehicle. If the test fails, the vehicle incurs 1 Stress Point in addition to any other Stress incurred during the test.

PULL TEST SIDE EFFECTS TABLE		
Object Weight	**Speed Reduction**	**Stress**
Up to 1.5 x Load Rating	Half-speed	+1/hour
1.6 to 2 x Load Rating	Quarter speed	+1/minute

MECHANICAL ARMS AND LEGS

Some vehicles and many drones feature mechanical arms and legs. The following rules govern the use of vehicle appendages.

ARM TESTS

A successful Arm Test is required to perform any sort of articulate motion (such as picking up an object, turning a switch and so on) with a vehicle's mechanical arm. The test target number is the vehicle's Handling Rating. If a rigger is controlling the vehicle, he may add a number of Control Pool dice to this test equal to the rigger's Quickness Rating. If a drone is not directly controlled by a rigger (see **Drones,** p. 65) use the drone's Pilot Rating in place of the Quickness Rating.

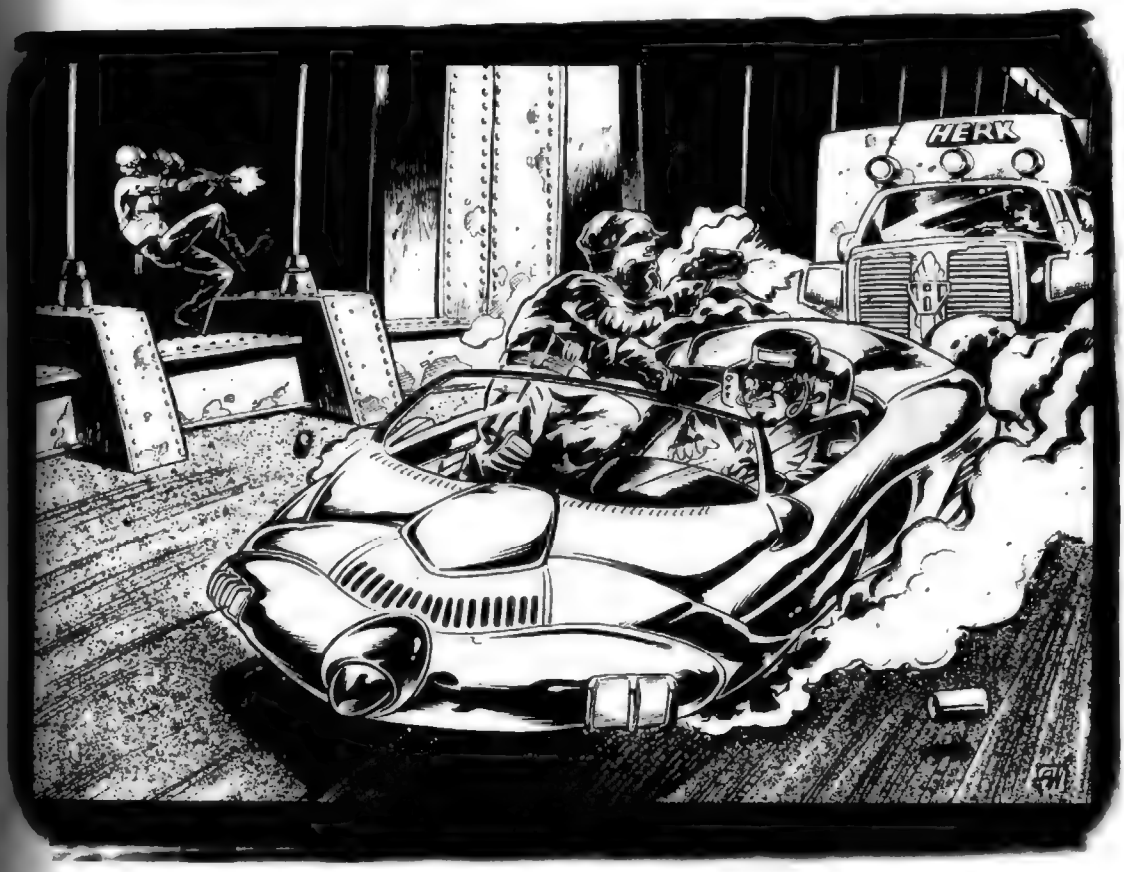
The gamemaster may decrease the base target number for simple tasks such as picking up a large object the arm can easily grip, or he can increase it for difficult tasks such as defusing a bomb with a drone's mechanical arm.

ARM SKILL TESTS

A character (or a drone's Pilot) may use a skill while using a mechanical arm, for example, using the Demolitions Skill to defuse a bomb with a mechanical arm. In such cases, a vehicle with a high Handling Rating may make the Skill Test more difficult.

To reflect this, increase the Skill Test target number by 1 for each point that the vehicle's Handling Rating exceeds 3. For example, if the vehicle has a Handling Rating 4, add 1 to the Skill Test target number. If the vehicle has a Handling Rating 5, add 2 and so on.

Sergeant York of the Seattle division of Lone Star is trying to defuse a bomb found in the basement of the Seattle Space Needle. He's using a bomb-defusing drone (Handling 4), which is equipped with a set of mechanical arms.



Normally, an Arm Test for the drone would use a base Target Number 4, the same as its Handling Rating. But the gamemaster decides that this operation is particularly tricky, so she raises the base Target Number to 5.

In addition, York is using his Demolitions 4 skill for the test. The drone has a Handling Rating 4, so that adds another 1-point increase to the target number, for a final Target Number of 6.

York's player rolls 4 dice for the test and gets a 1, 2, 5 and 5. The drone's arms just weren't articulate enough, and the bomb detonates prematurely. The drone is toast and the basement of the Needle is kinda beat up—but York, who is holed up fifty meters away in an armored van, is fine.

ARM MELEE ATTACKS

Characters may also use mechanical arms to make melee attacks against other characters. The modifier for a high Handling Rating also applies in this situation.

The effective Strength Rating for the test is equal to the vehicle's Body Rating multiplied by itself. Arms can be modified to have higher Strength Ratings (see p. 145).

MECHANICAL LEGS

Vehicles or drones that use mechanical legs to propel themselves may walk or run using the standard rules for walking and running (see p. 83, **SRII**). All modifiers that apply to walking or running characters also apply to walking or running vehicles.

Similarly, vehicles with legs use the standard character combat rules (see the **Combat** chapter in **SRII**) rather than the vehicle combat rules in this book.

The listed Speed Ratings for vehicles with legs represent Walking speeds. A vehicle's Running speed is equal to its Speed Rating multiplied by 2.5.

Vehicles with legs cannot use their legs to kick during melee combat. Attempting to do so results in the vehicle falling.

AIR CUSHION VEHICLES

Air-cushion vehicles (ACVs), more commonly known as hovercraft, cannot climb or pass across any significant slope, because they simply slide down such slopes. The gamemaster determines whether slopes in any given terrain affect hovercraft in this manner.

In addition, the buffering effects of an ACV's rubberized side skirts provide protection when a hovercraft crashes. As a result, ACV damage levels never exceed Serious damage when they crash (see **Vehicle Damage,** p. 49).

Because of their unique operating mode, terrain is defined differently for ACVs, as shown in the ACV Terrain Classifications Table.

ACV TERRAIN CLASSIFICATIONS TABLE

Terrain	Description
Open	Relatively flat areas, including rolling plains, calm to slightly choppy water, and normally impassable flat terrain such as swamps, bogs and marshes
Normal	Similar to open terrain, except with scattered moderate obstacles such as light to dense brush, creek beds, mild slopes and so on
Restricted	Any terrain that demands moderately precise movement, such as suburban streets, winding roads, hills and medium/heavy woods
Tight	Any terrain that requires exceptionally precise maneuvering, including urban settings, badlands, dense woods and stormy seas

AIRCRAFT

Aircraft require a certain amount of flat space to take off or land. The exact amount depends on the aircraft's Landing/Takeoff profile and its load of cargo and passengers, as shown on the Runway Distances Table.

The first distance listed in each table category applies when an aircraft is carrying cargo and passengers that weigh less than its Load Rating. The second distance applies when the weight of cargo and passengers equals or exceeds the aircraft's Load Rating.

Note that vertical takeoff and landing (VTOL) aircraft do not require runways.

RUNWAY DISTANCES TABLE

Aircraft Profile	Takeoff (In meters)	Landing (In meters)
Normal	B x 150/B x 225	B x 300/ B x 450
STOL (Short Takeoff/ Landing)	B x 40/B x 125	B x 75/B x 200
VSTOL (Very Short Takeoff/Landing)	B x 20/B x 45	B x 40/B x 100
VTOL (Vertical Takeoff/ Landing)	NA	NA

B = Body

TAKING OFF/LANDING ON UNUSUAL SURFACES

Any time a character attempts to land or perform a takeoff from an irregular runway surface, in adverse weather conditions or in a combat situation, the controlling character must make a successful Driving Test to perform the action. Unusual runways include aircraft carrier decks, automobile highways, water surface landings (without float-plane adaptation), flat stretches of grassland and so on.

When taking off under such circumstances, the test's base Target Number is 3. When landing, the base target number is 4. Any appropriate modifiers from the Takeoff/Landing Modifiers Table and the Driving Test Modifiers Table (p. 21) apply as well.

In addition, any character attempting to land or perform a takeoff from a rough or uneven surface must make a Damage Resistance Test against 6L Damage for the aircraft. This test reflects the damage caused to the craft's landing gear from rocks, gravel, potholes and other features of the rough surface.

TAKEOFF AND LANDING MODIFIERS

Situation	Modifier
Cross winds	+2
Heavy cross winds	+3
Rough or uneven surface	+1
STOL profile	+1
VSTOL profile	+3
Arrestor cable or crash net in use (landing only)	–1

TAKEOFF AND LANDING MODIFIERS TABLE KEY

Cross winds: The cross winds modifier applies when strong winds blow across the runway. The gamemaster determines when such conditions exist.

Heavy cross winds: The heavy cross winds modifier applies when storm-generated winds blow across the runway. The gamemaster determines if such conditions exist.

Rough/uneven surface: This modifier applies when a character attempts to land or perform a takeoff from a rough, uneven or gravel surface. This modifier does not apply to smooth but irregular runway surfaces, such as aircraft carrier decks, calm water or asphalt roadways.

STOL/VSTOL landings/takeoffs: This modifier reflects the increased difficulty of STOL- and VSTOL-profiled landings or takeoffs.

Arrestor cable/crash net: This modifier applies if the runway surface is fitted with an arrestor cable, crash net or other braking device to stop the aircraft after it has landed. Note that only aircraft equipped with a tailhook can use an arrestor cable to brake their landing motion.

MONORAILS AND TRAINS

Monorail and standard trains are divided into engines and cars. Engines possess their own means of propulsion, while monorail and train cars must be pulled by engines. Note that in most (though not all) city monorail or subway systems, each car in a subway train is considered an "engine" because each car can move on its own.

Though monorails and trains may travel only along fixed rail paths, characters can alter the speeds of monorail or train engines by making Driving Tests against the engine's Handling Rating. By speeding up or slowing down, a character can throw off a would-be attacker's aim or tactical maneuver. The Handling Rating of an engine applies for the entire train that the engine is pulling or pushing. If two or more engines are propelling a train, use the highest Handling Rating for the entire train.

Each component of a train, whether an engine or a car, has its own Body and Armor Ratings. Damage incurred by one car or engine of a train does not affect the other components.

The Load Rating of an engine indicates the total weight it can pull, including the weight loaded in cars that the engine is pulling. If two or more engines are in use on a train, add the Load Ratings. The Load Rating of a car reflects the weight that car alone can carry.

Public monorail networks are found in megasprawls, and high-speed monorail lines, such as the Transrapid Superconductor monorail in the Allied German States, provide passenger service between cities.

Standard rail lines continue to operate throughout the world as well, though in North America standard rail lines are generally relegated to cargo transport duties. In Europe, substantial numbers of passengers use standard rail lines for travel between cities and countries.

MISSION IMPROBABLE

It started as a simple job. (How many times have you heard that in your life!) I should have known; few things in my life are ever simple, but that's what you get when you're a smuggler and sometime runner, making your living outsmarting the Powers That Be. I'd been hired by a Johnson to retrieve a certain package from an island that lay in Salish territory, which made sending a ground team a difficult proposition. Border crossings and fake datawork and all, you know—and it'd have to be good datawork, in case the Salish authorities decided to get picky about "interlopers" from the UCAS. Good, of course, meaning expensive. Even at my hefty fee, I was cheaper than the usual running team. The Johnson and her up-front cred checked out, so I took the job. A simple helicopter flight out to the island, a quick in-and-out, return trip and a hand- over—easy money, I thought.

I drove my favorite car to the place where I'd hidden my 'copter away. She was my pride and joy, that Airstar—a good sturdy workhorse of a vehicle, with plenty of nifty mods I'd made myself. Any decent rigger, in my opinion, also ought to be a halfway decent mechanic—especially a rigger like me, who couldn't always count on a talented and discreet mechanic turning up if a smuggling run went sour.

I waved hello to the maintenance crew, but didn't make much small talk. No time to chat when biz was waiting to be done. They gave me an all-systems-go report, which was all I needed to hear. I strode up to the Airstar, checked to make sure I had plenty of ammo for my gun, then climbed into the pilot's seat.

I jacked into the helicopter's rig and the virtual heads-up display blossomed before my eyes. Dizziness hit me for a split second; then my mind adjusted to the blizzard of input from the view screens, which were arrayed before me like the many facets of a cut diamond. The screens showed views from every angle, as well as numerous data displays. At the moment, the largest screen, positioned squarely in the center, displayed the status of the Airstar's system as it warmed up.

As I summoned the helicopter to life, I could feel the rumble of the Pratt & Whitney turbojet engines in my chest. The chopper's blades seemed to rotate in sync with the blood pulsing through my limbs. I shifted into forward visual mode; a small icon blinked in a corner of

the main view screen, indicating that the hangar door had opened. I was cleared for takeoff.

I pulled my legs into a crouch. The rotating blades went from a whine to a roar in response. I leaped upward and the helicopter rose, slowly but surely soaring upward through the rooftop hangar door. Once I'd gotten several dozen meters above the roof of the warehouse, I set the chopper to hovering briefly as I scanned the Seattle sprawl far below. The low background levels of thermal and electromagnetic radiation emanating from the city showed up as a dull red and green glow in my display. I spotted no active radiation sources, which meant no one was watching right now.

I turned my attention to the navigational screen. It showed my target destination as a red dot, a tiny island of hot brightness in the deep, cool blue of the Pacific Ocean. With another flicker of thought I commanded the screen to display known sensor watch posts. They appeared as small radar-dish icons giving off white waves.

I swiftly plotted a course that eluded most of the lookout points, then stretched my arms over my head, twisted my body toward Puget Sound, and swept my arms down to my sides. The Airstar turned and sped toward the moonlight that glinted off the Sound.

This was going to be a cakewalk. Breeze on out to the target, pick up the package and come back home. I'd be back in time for happy hour at the Shack—and this time able to pay my tab, and just maybe buy a round or three for a certain pretty lady I'd had my eye on recently. Yep, this was just the kind of job I liked best ...

Suddenly the chopper's warning klaxons started screaming. I turned my head and my visual display rotated until the rear view screen occupied my central window. On it I saw two dark flecks against the pink and gray pre-dawn sky. The Airstar's Identify Friend or Foe transponders identified the craft as two F-B Eagle interceptors from the UCASAF's Fifth Air Wing based at McChord.

Before I could make another move, bright spurts of thermographic orange blossomed under the wings of both interceptors and the helicopter's targeting alarm began to shriek. A warning message flashed on my heads-up display—both interceptors had locked on to the Airstar and fired air-to-air missiles.

Instinctively, I arched my body toward the coastline, a movement that turned the helicopter. At the same time I started kicking my legs furiously like an Olympic swimmer, sending the chopper screaming toward the land. But my evasive action didn't fool the missiles' targeting sensors. The deadly projectiles twisted and dove after me.

Time for Plan B, then. I focused my mind on the right control, and a giant red "PANIC" button materialized under my left hand. I slapped the button. Explosive charges planted at strategic points along the chopper's body detonated, destroying the brackets that held the Airstar's outer shell in place. As the shell fell away, it revealed a second skin coated with radarbane.

I knew I wasn't out of trouble yet. I jackknifed my body toward the floor like a diver, and five small parachutes blossomed from the 'copter as it plunged into a power dive. Thermite flares swung from two of the chutes, bunched strips of aluminum chaff from two more. The last chute supported a small rocket, hardly large enough to dent a paper airplane, but containing a transponder and flare that mimicked the Airstar's thermal and electromagnetic signature. The chopper's radarbane skin would cloak it from the missile's targeting sensors, and the chaff and flares would temporarily confuse the two missiles, which would then lock on to the decoy rocket.

I hoped.

Scant seconds after I'd I punched the panic button I felt my virtual body convulse as the shock waves from two explosions rocked the helicopter. I twisted around, bringing the chopper face-to-face with my two attackers, and the direction-finding axes of the Airstar's targeting program appeared on the main view screen. I selected and armed two anti-radiation missiles, then cut them loose as soon as I heard the lock-on chirp twice. The ARMs appeared like two streaks against the sky as they homed in on the strong signals from the pursuing flyboys' jammers. A half-second later the 'copter's targeting alarm fell silent, which told me that the missiles had destroyed the F-Bs' targeting sensors. (Thank heaven for ARMs. They lock on to a target's emissions, so the stronger your opponent's sensors and jammers, the better the chance your ARMs will find their mark. The F-Bs' ECM suites would have spiked most of my weapons for sure if the flyboys'd had a chance to use them. But the ARMs homed in on the jammer signals and saved my hoop.)

Both pursuing planes wavered for a few seconds as small explosions erupted in their noses where their targeting sensors had been. Then the flyboys swung around and streaked past me, strafing the Airstar with miniguns. I kept the chopper diving toward the shoreline; I could feel my skin twitching as I pushed the Airstar beyond its limits and its body buckled under the strain.

Before the flyboys could swing around for a second pass, a green wave of Salish radar passed over my view screen. I'd entered Salish-Shidhe airspace—safe territory for me as far as my two hunters were concerned. (Though not exactly safe per se ...) The zoomies broke off pursuit, apparently unwilling to risk an international incident for one lone 'copter. After a few seconds I breathed a sigh of relief. I'd heard no warnings from Salish air-traffic control, which meant it hadn't detected me.

I swung the Airstar lower until it almost skimmed the treetops—best way to avoid future encounters—while a nagging question formed in the back of my mind. Why had the two zoomies tried to shoot me down with no warning? I'd had plenty of run-ins with Salish and UCAS jet jockeys during past smuggling runs, but they'd never opened fire without issuing some kind of warning or threat first. This geek-first-warn-later buildrek—that was a Lone Star trick. Not the kind of thing I was used to getting from fellow flyers, even if they were the Law and I wasn't.

The glowing orange orb of the sun, just rising over the horizon ahead of me, was beginning to dispel the shadows on the land below. Too bad it could shed no light on my question. I'd eluded my flying foes for now, but I couldn't run forever. Sooner or later I had to go to ground, and then they'd find me.

Well, what the hell. Maybe I could still do what I'd been hired to do before the cavalry showed up.

I landed the Airstar right where the Johnson had told me to, then holstered my Ingram and set out to retrieve the package. I briefly wondered what was in it—something worth sending air

jockeys after a lone 'copter, maybe? And how had they known who I was?—but swiftly dismissed such speculation as useless. Smugglers who live to spend their earnings learn not to ask unnecessary questions.

The McNeil Island Penitentiary Compound was looming dead ahead. It had been abandoned for years, but the Johnson had warned me that "unfriendly people" would likely be watching the place. I knew I'd have to make an unorthodox entrance, but I still wasn't looking forward to it. I reached the entry spot, took a deep breath, braced myself, and lowered myself down into the storm sewer that led to the compound's central building.

After wading through stinking raw sewage for what seemed like hours, I finally came to the manhole I was looking for. I shoved it to one side, pulled myself up out of the sewer and squeezed through the narrow aperture, cursing under my breath all the while. Then, squatting on the damp concrete floor under a heavy grating, I looked around as best I could in the dim light.

I'd fetched up in a maintenance trench under the ground floor of the main building. I could see the outlines of power cables and plumbing pipes; they smelled of rust and rot. Hulking overhead, toward the back of the trench, I spotted several giant shadows—turbines, which meant I must be under the plant's power room.

I was reaching up to lift the grating when a faint grinding noise froze me in place. Then I heard the telltale whine of a laboring combustion engine, growing gradually louder as it came my way. Twisting my head over my shoulder, I saw a dark shadow rumble over the grating. I withdrew my fingers as the thing rolled to a stop directly above me.

It was a patrol drone—an FMC Sentinel. Only slightly larger than a kid's wagon, it was equipped with tank treads to cover rough terrain, and it packed enough firepower to ruin any shadowrunner's day. If it detected me, it would certainly ruin mine.

Soundlessly I unlatched the magazine in my Ingram, then reached into my cargo pocket and withdrew a 30-round clip of armor-piercing, silicone-coated depleted-uranium shells. As quietly as I could, I loaded the clip, then flipped the fire-mode selector switch to AUTO and poked the barrel between the chinks in the grating.

For the first time that night I was glad to be skulking in a sewer. If I'd run into the Sentinel above ground, I wouldn't have stood a chance of destroying it before it spotted me. But like most drones designed for security work and perimeter detail, the Sentinel's underbelly was fitted with light armor. After all, no one expects a security drone to run into anti-tank mines. Sparks flew as I cut loose with the Ingram and punched several rounds through the Sentinel's steel skin. The bullets ripping into its innards touched off electrical fires inside the drone, making it sputter and pop. A loud explosion knocked me backward as a stray round burst through the fuel tank. I scurried away as burning fuel began raining down into the trench.

Within minutes the place was crawling with drones. I had to expend the rest of my APDU and one thermite grenade before I found a ventilation duct to hide in. Crawling through the network of ventilation shafts up to the top floor took me about two hours. When I finally squirmed out of the narrow shaft, I landed clumsily in a darkened hallway. To my right was a security door, with an electronic keypad directly above the knob. Assuming I'd kept the map in my head straight through all the twists and turns of the ventilator shafts, the package should be inside.

I loaded another magazine, emptied the Ingram into the lock and kicked the door open. A quick reload later, I cautiously surveyed the room. It had been some grunt's office once, indistinguishable from a hundred others. A computer terminal sat on top of a cheap plaswood desk, both of them covered with dust.

I walked over to the terminal. A chip was loaded in one of its drive slots. I opened the desk's top drawer—just as I'd hoped, there were a few thumbtacks still rolling around in it. I took out a thumbtack, stuck its pointy end in the slot and wiggled it around until the chip popped out. Package retrieved.

I'd hardly turned around when alarm klaxons started blaring all around me. The sound of running feet came from the corridor outside; no exit that way. I turned wildly toward the office's sole window, only to see a curtain of thin steel plates ripple down to cover it. The sharp thud of the door hitting the wall made me spin back around. Ingram raised, to confront my new enemy—four armored security guards whose uniform patches I didn't recognize. All of their guns were pointed straight at me.

For about five seconds, nobody moved. Then I heard a familiar voice from the hallway.

"Thank you, gentlemen," said my Johnson as she sauntered into the room. "You can put the guns away now."

As the sec-boys lowered their weapons, the Johnson gave me a brilliant smile. "Congratulations, Roy," she said. "You passed."

I eased my grip on the Ingram a fraction … but only a fraction. "This was a *test*? Just a test?"

"I needed to find out if you were worth your reputation," she answered. "And it seems you are. You've been quite resourceful. I can't afford anything less—not for the job I have in mind."

"And the chip?" Curiosity was fighting with anger now. I decided it couldn't hurt me to let curiosity win. "Is it something, or just worthless drek?"

"Oh, it's something, all right." The Johnson laughed softly. "Consider it your payment for today's work, should you decide you'd rather not be part of the real mission." She gave me a measuring look, then continued. "Would you care to hear about it?"

"You'd really let me leave now? Just like that?"

"Just like that. I need willing participants, Roy, not just hired guns who might decide to cut and run when things get more dangerous than they bargained for. From what I learned about you before setting up this little excursion, I'd say you might be a willing participant—once you know everything. But for the moment … " She gave me another sizing-up look. "What are your feelings about the Draco Foundation?"

I nearly dropped the Ingram in surprise. "Can't say I have any, one way or the other," I managed to say after a moment. "Why? Are you working for them or against them?"

"For." Another soft laugh. "Oh, definitely for. Which I'll prove to your satisfaction, if you want to hear about the job. Over dinner. You choose the restaurant—though I will say, I'm partial to Thai."

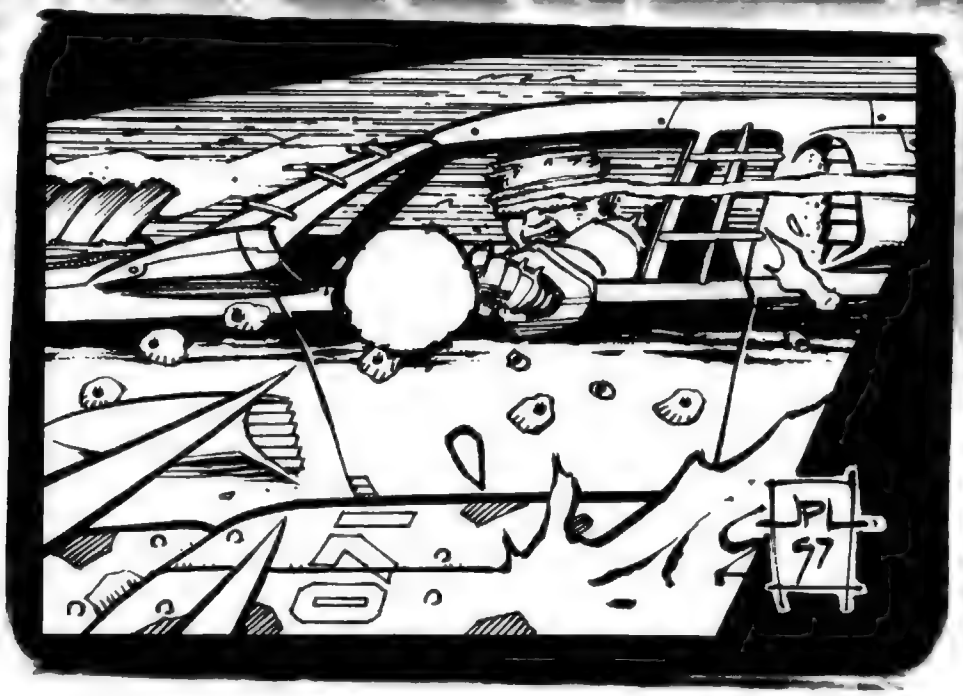
I holstered the Ingram. "I know a place in Tacoma. Roong Petch. Hole in the wall, but it serves the best yellow curry in town."

"You can still back out after dinner," she said. "I'll tell you enough to let you know what you're likely in for, not so much that you'll be a danger to us if you refuse. As I said, I need more than just hired guns."

I nodded toward the door. "Time's wasting, ma'am—and I'm getting hungry."

She smiled at that—a warm smile that lit up her blue eyes. I had a nagging feeling that I'd seen her somewhere before—and not on this job, either—but dismissed it as smuggler's paranoia. As I followed her and the sec-boys out of the room, I wondered just what kind of drek-pile I might be getting myself into. You know the old saying—never deal with a dragon, or with a dragon's employees …

VEHICLE COMBAT



The vehicle combat system in this chapter replaces the system described on pages 105–9 of the **Shadowrun, Second Edition** rulebook. This vehicle combat system is intended to preserve the spirit, if not the mechanics, of the existing **Shadowrun** rules by providing a simple, mapless system for resolving vehicle combat and individual character actions simultaneously.

This section lays the foundation for the new vehicle combat system and provides rules for resolving vehicle damage caused by weapons fire, crashes and collisions with objects such as walls, passengers and other vehicles; rules for firing vehicle weapons and vehicles and magic.

For drone rules, see **Drones,** p. 62.

THE MANEUVER SCORE

The Maneuver Score is the cornerstone of the vehicle combat system. This rating measures the relative tactical advantage of a vehicle engaged in combat and is used when resolving nearly all vehicle combat maneuvers. Generally, a character receives bonuses or penalties for his vehicle combat maneuvers based on the current Maneuver Score of his vehicle. (The specific application of the Maneuver Score is described in the rules for each vehicle combat maneuver.)

The Maneuver Score consists of four components: Vehicle Points, Terrain Points, Speed Points and Driver Points. During each Combat Turn, these components—and the Maneuver Score itself—change to reflect the shifting conditions of combat. Either players or gamemasters may monitor these changing scores, depending on the preferences of the group.

If a pedestrian and a vehicle interact, resolve the situation by assigning the pedestrian a Maneuver Score equal to his Quickness.

DETERMINING THE MANEUVER SCORE

The Maneuver Score is determined by adding together a vehicle's Vehicle Points, Terrain Points, Speed Points and Driver Points during a Combat Turn. Once a vehicle's Maneuver Score is determined for a turn, that score is used throughout the turn. When the next Combat Turn begins, the four components and the Maneuver Score are re-calculated.

Vehicle Points

The Vehicle Points for a turn may be positive or negative depending on the type of vehicle a character is driving. The Vehicle Points Table lists the Vehicle Points for the various vehicle types.

VEHICLE POINTS TABLE

Vehicle Type	Vehicle Points
Car/Pickup Truck	0
Sports Car	+3
Motorcycle	+5
Limousine/Light Truck/Van	–3
Heavy Truck	–5
Tractor Trailer	–7
Tracked Vehicle	–3
Ultralight Aircraft	+10
Helicopter	+5
Small Airplane	0
Large Airplane	–5
Fighter Jet	+20
LTA/Zeppelin	–10
HSCT/Suborbital	–15
Semiballistic	–25
Small Motorboat	0
Racing Boat	+5
Yacht	–10
ACV/Hovercraft	+2
Train/Monorail	–10

Terrain Points

Terrain Points are negative values that reduce a vehicle's Maneuver Score. Terrain Point values for the four basic types of terrain are listed in the Terrain Points Table.

TERRAIN POINTS TABLE

Terrain	Terrain Points
Open	0
Normal	–2
Restricted	–4
Tight	–10

Speed Points

To determine a vehicle's Speed Points, divide the vehicle's speed by ten and round down the result.

Driver Points

The player makes an Open Test using the relevant Vehicle Skill to generate his Driver Points (see **Open Tests,** below). Keep a separate tally of the Driver Points generated from the Open Test; these points also determine the first Combat Phase in which passengers can act. (See **Passenger Actions during Vehicle Combat,** p. 49, for more information.)

OPEN TESTS

Unlike standard Success or Opposed Tests, in which players attempt to achieve set target numbers with their dice rolls, Open Tests have no target numbers. Instead, the result of the Open Test may serve as a target number for subsequent tests or generate other numbers, such as Driver Points.

When making an Open Test, a player rolls a number of dice equal to the skill or attribute he is using for the test. The player then discards all but the highest single die result.

The Rule of Six (p. 32, **SRII**) does apply to Open Tests; a player can re-roll any die that produces a "6" and add the result.

Rich rolls 5 dice on an Open Test. He scores 6, 6, 4, 3, and 1. Re-rolling the two 6s, he achieves a 6 and 2, so he re-rolls the 6 yet again and gets a result of 4. That gives Rich a result of 16 (6 + 6 + 4) for a single six-sided die.

VEHICLE COMBAT TURN SEQUENCE

The Vehicle Combat Turn uses the following sequence. Note that gamemasters must calculate Maneuver Scores for all NPC vehicles.

1. Determine starting distance and speeds (first Combat Turn only).
2. Determine the Vehicle, Terrain and Speed Points for each vehicle.
3. Allocate Control Pool dice.
4. Determine Driver Points and calculate the final vehicle Maneuver Scores for the Combat Turn.
5. Determine Initiative.
6. Characters take actions and resolve results.
7. Determine changes in speed, distance or terrain.
8. Begin a new Combat Turn.

1. Determine starting distances and speeds (first Combat Turn only).

Before vehicle combat begins, the gamemaster determines the starting speeds of NPC vehicles and distances between each vehicle. Vehicles that are stopped, parked or idling begin with starting Speeds of 0. Players may declare the starting speeds of their vehicles, though the gamemaster chooses the starting speed of any vehicle whose driver is incapacitated or unconscious.

All Dice Pools for drivers, passengers and pedestrians also refresh, per standard Combat Turn rules (p. 78, **SRII**).

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2. Determine the Vehicle, Terrain and Speed Points for each vehicle.

After determining the Vehicle, Terrain and Speed Points for each vehicle (see the preceding **Vehicle Points, Terrain Points** and **Speed Points** subsections), combine these values to produce a partial Maneuver Score for each vehicle.

3. Allocate Control Pool dice.

Each player may allocate Control Pool dice for the Open Test used to determine his Driver Points for the turn (see preceding **Driver Points** subsection for details). Dice allocated for this test are not available for any other purpose during the turn. These dice do not refresh at the start of each Combat Phase; they refresh at the end of the Combat Turn. All remaining Control Pool dice refresh per standard rules and may be used for Driving Tests during each phase of the character's Initiative.

4. Determine Driver Points and finalize vehicle Maneuver Scores for the Combat Turn.

Each player makes an Open Test to determine each vehicle's Driver Points (gamemasters make the test for NPC vehicles).

Add the Driver Points to the partial Maneuver Scores generated in Step 2. The results are the Maneuver Score for each vehicle.

5. Determine Initiative.

Every player rolls Initiative for his character at this time—whether the character is driving a vehicle, riding as a passenger or standing on the ground as a pedestrian.

Remember that Initiative dice bonuses apply only to riggers who are jacked into vehicles. Bonuses for boosted and wired reflexes, physical adept increases and magic do NOT apply for drivers when determining Initiative.

Passenger characters must hold their actions until the phase indicated by the driver's Driver Points (see **Passenger Actions during Vehicle Combat,** p. 49).

6. Characters take actions and resolve results.

All characters (drivers, passengers and pedestrians) take their actions. The order in which characters act is determined by their Initiative results, per standard combat rules (pp. 78–80, **SRII**).

Resolve all character actions.

7. Determine changes in speed, distance and terrain.

After resolving all actions, the gamemaster determines if any vehicles have changed speed, based on their actions during the turn. If necessary, the gamemaster calculates changes in distances between vehicles, based on the new speeds.

The gamemaster also decides if any vehicles have moved into a different terrain type during the Combat Turn. If so, terrain changes take effect during this phase.

8. Begin a new Combat Turn.

Begin a new Combat Turn. Distances and speeds have already been determined for the new turn, so start with Step 2.

Control Pool Dice allocated for Driver Points Open Tests refresh at this time.

Rigger X is trying to make a fast getaway from two Lone Star cruisers hot on his tail. At the beginning of the chase, Rigger X's Mach 6 (his souped-up Westwind 2000) is burning rubber at a speed of 250 meters per Combat Turn, while the pursuing cops are doing 275 meters per turn and are a few blocks behind him. X and his pursuers are roaring down Central Avenue, a five-lane city street. Fortunately, only very light traffic is on the street.

The starting distance and speeds have already been set, so Rigger X's player and the gamemaster now determine the Vehicle, Terrain and Speed Points for each vehicle. Their calculations might look like this:

Mach 6

Sports car	*+3 Vehicle Pts.*
Normal terrain	*–2 Terrain Pts.*
250 m/turn	*25 Speed Pts.*
Partial Maneuver Score	*26*

Lone Star Cruisers

Regular car	*0 Vehicle Pts.*
Normal terrain	*–2 Terrain Pts.*
275 m/turn	*27 Speed Pts.*
Partial Maneuver Score	*25*

Allocating Control Pool Dice is the next step. Rigger X decides to allocate 4 of his 7 Control Pool Dice for the Driver Points Open Test. That leaves Rigger X with only 3 Control Dice available for other actions during the Combat Turn.

The cops driving the Lone Star Cruisers are NPCs, so they use their Professional Rating dice (Rating 2) in place of Control Pool Dice. (Because they are NPCs, the cops may also use their 2 Threat/Professional Rating dice for Success Tests.)

Now the player and gamemaster make Open Tests to determine the Driver Points for their characters. Rigger X has a Car Skill 5 and has allocated 4 Control Pool dice for the test, so he rolls 9 dice and obtains the following results: 1, 2, 2, 3, 3, 3, 3, 5 and 6. Re-rolling the 6, he gets a result of 5, which makes his highest die result 11. That gives Rigger X 11 Driver Points.

The gamemaster makes the Open Tests for the two cops. Both cops have Car Skill 3 and 2 Professional Rating dice, so the gamemaster rolls 5 dice for each car. The first (Cruiser #1) generates a 2, 3, 5, 6 and 6; re-rolling the two 6s, the gamemaster gets a 1 and 2, so the final tally is 2, 3, 5, 7 and 8. That gives Cruiser #1 8 Driver Points.

On the Open Test for Cruiser #2, the gamemaster rolls a 3, 4, 5, 6 and 6. Re-rolling the two 6s produces a 4 and 6. Re-rolling the 6 again, the gamemaster gets a

3, so the highest die result is 15. That gives Cruiser #2 15 Driver Points.

Now the player and gamemaster add the Driver Points to their characters' partial Maneuver Scores. That gives the characters the following Maneuver Scores for the turn:

Character		*Maneuver Score*
Rigger X	*11 + 26 =*	*37*
Cruiser #1	*8 + 25 =*	*33*
Cruiser #2	*15 + 25 =*	*40*

At this point, all the player characters involved—including Rigger X's passengers and the other cops riding shotgun in the two cruisers—make Initiative Tests, and the standard Combat Turn begins.

VEHICLE ACTIONS

In addition to standard character actions, such as activating cyberware, observing in detail, non-combat Driving Tests and so on, drivers can perform the following vehicle actions. Note that all these actions are considered Complex Actions.

•**Accelerating/Braking:** The driver attempts to change his vehicle's speed, either to close the distance with another vehicle or to increase his distance from other vehicles.

•**Positioning:** The driver attempts to maneuver his vehicle into a better tactical position for fighting.

•**Ramming:** The driver attempts to ram another vehicle with his vehicle.

•**Hiding:** The driver attempts to break contact with another vehicle(s).

•**Performing a Non-Driving Action:** Non-driving actions include firing personal weapons, using onboard electronics, activating cyberware and so on.

ACCELERATING/BRAKING

Accelerating and braking are two related actions. In both cases, the driver is trying to change his vehicle's speed.

To resolve either action, the driver makes a Driving Test against the vehicle's Handling. Apply any appropriate modifiers from the Accelerate/Brake Target Modifiers Table.

If the Accelerating/Braking Test succeeds, the vehicle increases or decreases its current speed. The increase or decrease is equal to the vehicle's Acceleration Rating, multiplied by the number of successes generated on the test. However, no vehicle can exceed its Speed Rating by more than 50 (Speed Rating times 1.5) percent of the rating. All vehicles receive 1 Stress Point whenever they exceed their Speed Ratings.

If a pursuing vehicle's speed increase is equal to or greater than the distance between the vehicle and its target, multiplied by 2, the vehicle can ram the targeted vehicle or pedestrian during the controlling player's next available action.

ACCELERATE/BRAKE TARGET MODIFIERS TABLE KEY

Higher/Lower Maneuver Score: If the Maneuver Score of the driver's vehicle exceeds the Maneuver Score of the vehicle he is chasing or fleeing, the target number for his Driving Test is reduced, as shown on the table. If the Maneuver Score of the opposing vehicle exceeds the score of the driver's vehicle, the target number is increased, as shown. If a vehicle is fleeing or chasing more than one vehicle, use the highest Maneuver Score of the opposing vehicles when determining this modifier.

Fleeing from more than one vehicle: If the driver is attempting to flee from two or more vehicles, apply a +1 target modifier for each additional vehicle. For example, a vehicle fleeing 2 opposing vehicles receives a +1 target modifier, while a vehicle fleeing 3 opposing vehicles receives a +2 modifier.

Autonav is active: An active autonavigation system hinders combat maneuvers because it will attempt to *decrease* the vehicle's speed to a safe limit. If a vehicle's autonav system is active, apply a target modifier equal to the vehicle's Autonav Rating. Turning the autonavigation system on or off is a Simple Action; if the driver is jacked into a vehicle, these are Free Actions.

VCR implant: If the driver is a rigger jacked into a rigged vehicle, reduce the target number by an amount equal to the rigger's VCR cyberware rating.

Cruiser #1 and Cruiser #2 are only 300 meters behind Rigger X, who decides to accelerate in an attempt to lose the two Lone Star cars.

ACCELERATE/BRAKE TARGET MODIFIERS TABLE

Speed Conditions	Target Modifier
Vehicle's Maneuver Score exceeds opponent's Maneuver Score by 10 or less	–2
Vehicle's Maneuver Score exceeds opponent's Maneuver Score by 11 or more	–4
Opponent's Maneuver Score exceeds vehicle's Maneuver Score by 10 or less	+2
Opponent's Maneuver Score exceeds vehicle's Maneuver Score by 11 or more	+4
Vehicle is fleeing from more than one pursuing vehicle	+1 per additional vehicle
Vehicle exceeds its Speed Rating	+1
Vehicle's autonav is active	+ Autonav Rating
Terrain	
Open	–1
Normal	0
Restricted	+1
Tight	+3
Driver has VCR implant	– (VCR cyberware rating)

The base target number for the Accelerating Test is the Mach 6's Handling Rating of 3. The following target modifiers also apply:

Cruiser #2's Maneuver Score of 40 exceeds Mach 6's score by 10 or less	*+2*
Rigger X is fleeing two vehicles	*+1*
The Mach 6's current speed of 250 m/turn exceeds its Speed Rating of 210	*+1*
Normal terrain	*0*
Rigger X has a Level 2 VCR and is jacked into the Mach 6	*–2*

Final target modifier +2

That leaves Rigger X with a Target Number 5 for the test.

Rigger X, who has Car Skill 5, decides to spend his remaining 3 Control Pool Dice on the test. Rolling 8 dice, he achieves 2 successes. Multiplying the 2 successes by the Mach 6's Acceleration Rating of 18 generates a result of 36. This gives the Mach 6 a current speed of 286, well below the car's limit of 315 meters per turn (210 x 1.5). The Mach 6 does, however, receive 1 Stress Point for exceeding its Speed Rating.

Cruiser #2 acts next and decides to close in on Rigger X. His vehicle has a Handling Rating 4, so the target number for the Driving Test is 4. The following target modifiers apply:

Cruiser #2's Maneuver Score exceeds Rigger X's score by 10 or less	*–2*
The car's current speed of 275 m/turn exceeds the car's Speed Rating of 240	*+1*
Normal terrain	*0*
The cruiser's Level 3 Autonav is active	*+3*

Final target modifier +2

That gives Cruiser #2 a Target Number 6 for the test. The gamemaster rolls 5 dice for the test (3 for the driver's Car Skill and 2 for his Professional Rating). The test yields 3 successes, so Cruiser #2's speed increases by 42 (Acceleration Rating of 14 x 3 successes = 42). That means Cruiser #2 speeds up to 317 meters per turn.

Let's skip to the end of the turn for a moment and assume that no other driving actions take place during the turn. The Mach 6's new speed is 286, while Cruiser #2's new speed is 317. 317 minus 286 equals 31, so Cruiser #2 closes 31 meters on the Mach 6 during the turn. The starting distance at the beginning of the turn was 300 meters, so at the start of the next turn Cruiser #2 is 269 meters behind Rigger X.

POSITIONING

Positioning a vehicle enables a driver to place his vehicle in a better tactical position for subsequent actions. In game terms, a successful positioning attempt gives a vehicle a higher Maneuver Score for the next Combat Turn, which puts the vehicle at a tactical advantage and gives its passengers more opportunities to act.

A driver can also make a positioning attempt to bring his vehicle to a stop at a particular point in order to provide a covering position for characters to enter, exit, mount or dismount the vehicle.

To position a vehicle, the driver makes a Positioning Test, using his Driving Skill, against a target number equal to his vehicle's Handling Rating. Apply all appropriate modifiers from the Positioning Target Modifiers Table. Record the number of successes generated on the test and add this value to the driver's Driver Points at the start of the next Combat Turn. These additional Driver Points increase the vehicle's Maneuver Score and allow passengers to act during later Combat Phases of the turn (see **Passenger Actions during Vehicle Combat,** p. 49).

POSITIONING TARGET MODIFIERS TABLE

Vehicle exceeds its Speed Rating	+1
Vehicle's autonav is active	+ Autonav Rating
Terrain	
Open	−1
Normal	0
Restricted	+1
Tight	+3
Driver has VCR implant	− (VCR cyberware rating)

Cruiser #1's driver decides to position his vehicle for better tactical advantage against the Mach 6. The base target number for the Positioning Test is the car's Handling Rating of 4, with the following modifiers:

Cruiser's speed of 275 m/turn exceeds its Speed Rating of 240	*+1*
Normal terrain	*0*
The cruiser's Autonav is off	*0*
Final target modifier	***+1***

That produces a final Target Number 5 for the test. The gamemaster rolls 5 dice for the driver (Car 3 plus 2 for the cop's Professional Rating) and generates only one success. At the start of the next turn, Cruiser #1 can add 1 to the result of the Open Test to determine the Driver Points for Cruiser #1's Maneuver Score.

If the driver is attempting to position his vehicle to stop at a particular point, the gamemaster determines how far the vehicle must travel to reach the desired spot. The result of the Positioning Test is multiplied by the vehicle's Acceleration Rating to determine how much of the distance the vehicle can cover. If the final result equals or exceeds the required distance, the driver is able to pull off the maneuver. Otherwise, the positioning attempt fails.

Josie Cruise is transporting a runner team in her helicopter Angelfire (Acceleration 14) to a designated landing zone outside a Seretech research compound, 140 meters from Angelfire's current location.

Josie decides makes a positioning attempt to bring Angelfire to a hover right above the landing zone. Her Positioning Test generates 4 successes, however, which means that Angelfire only travels 56 meters (4 x 14) during the attempt. This leaves her 84 meters short of the landing zone.

RAMMING

In a ramming attempt, the driver attempts to hit another vehicle or a pedestrian with his own vehicle.

First, the distance between the vehicle and its target must be less than the vehicle's Acceleration Rating. If the distance is greater, the vehicle driver can accelerate to close the distance (see **Accelerating/Braking,** p. 45). If the acceleration test produces a speed change greater than twice the distance, the vehicle driver may attempt to ram the target on his next available action.

Drivers may also make ramming attempts to break through walls or run down pedestrians.

To resolve a ramming attempt, the controlling player makes a Ramming Test using his Driving Skill against a target number equal to his vehicle's Handling Rating. Apply all appropriate modifiers from the Ramming Target Modifiers Table. If the test succeeds, the vehicle collides with the target.

Both the ramming vehicle and the target make Damage Resistance Tests against Collision Damage (see **Vehicle Damage from Impact,** p. 50). To determine the Power of the Damage Code, calculate the difference in speed between the two vehicles, then divide the result by 10 and round that number up to the nearest whole number. The attacker reduces the Power of the collision damage by his vehicle's Body Rating multiplied by the number of successes on his test. For the Damage Level, use the level corresponding to the difference in speed between the two vehicles, as shown on the Impact Damage Levels Table (p. 50). Both players may add available Control Pool dice to the Damage Resistance Test.

If either vehicle sustains damage from the ram, the controlling player must make a Crash Test (see **Crashing,** p. 51).

A desperate Rigger X decides to take out one of the Lone Star cruisers by ramming it. His Mach 6 has a Maneuver Score of 46, versus Cruiser #2's Maneuver Score of 35, so he figures the tactic will work.

Too much distance separates the Mach 6 from the cruisers, so Rigger X makes a Braking Test. The test nets a speed change of 110 meters per turn, which slows the Mach 6 down to 176 meters per turn. That figure still exceeds the 50 meters that separate the Mach 6 and the

RAMMING TARGET MODIFIERS TABLE

Ramming vehicle's Maneuver Score exceeds target's score by 10 or less	–2
Ramming vehicle's Maneuver Score exceeds target's score by 11 or more	–4
Target's Maneuver Score exceeds ramming vehicle's score by 10 or less	+2
Target's Maneuver Score exceeds ramming vehicle's score by 11 or more	+4
Vehicle exceeds its Speed Rating	+1
Vehicle's autonav is active	+ (Rating + 2)
Terrain	
Open	–1
Normal	0
Restricted	+1
Tight	+2
VCR implant	– VCR cyberware rating

nearest cruiser (Cruiser #2), so Rigger X must wait until the next phase before he can ram the cruiser.

Having nothing to lose, Rigger X attempts to ram the cop car on his next action. The Ramming Test base target number is 3 (the Mach 6's Handling Rating), and the following modifiers apply:

Attacker's Maneuver Score exceeds target's by 11 or more	*–4*
Normal terrain	*0*
Attacker has a Level 2 VCR	*–2*

The final Target Number is 3 – 4 – 2, or –3, which rounds up to 2 (since no target number can have a value less than 2).

Rigger X decides not to use any Control Pool dice, so he rolls 5 dice for the test (he has Car Skill 5). The test generates 5 successes, so the Mach 6 collides with Cruiser #2.

HIDING

To hide from or break contact with another vehicle, the controlling player makes a Hiding Test using his Driving Skill against a base target number equal to his vehicle's Handling Rating. Apply all appropriate modifiers from the Hiding Target Modifiers Table.

If the test succeeds, the vehicle breaks contact with the other vehicle(s) and also receives an Escape Bonus equal to the number of successes generated in the test. At the start of the next Combat Turn, the driver may add the Escape Bonus to his Driver Points. The Escape Bonus applies each Combat Turn until the other vehicle(s) relocate the hiding vehicle (see **Relocating,** p. 49) or give up trying.

In addition, a vehicle attempting to relocate the hiding vehicle must add the number of successes in the Hiding Test to the target number for the Relocating Test.

HIDING TARGET MODIFIERS TABLE

Hiding vehicle's Maneuver Score exceeds opponent's score by 10 or less	–2
Hiding vehicle's Maneuver Score exceeds opponent's score by 11 or more	–4
Opponent's Maneuver Score exceeds hiding vehicle's score by 10 or less	+3
Opponent's Maneuver Score exceeds hiding vehicle's score by 11 or more	+6
Vehicle exceeds its Speed Rating	+2
Vehicle's autonav is active	+ Rating
Escaping from more than one vehicle	+1 per additional vehicle
Terrain	
Open	+4
Normal	+2
Restricted	0
Tight	–2
VCR implant	– VCR cyberware rating

Enough positioning! Rigger X decides it's time to give Cruiser #1 the slip.

The Mach 6's Maneuver Score is 46, while Cruiser #1's score is 36. Both vehicles are now roaring down King Street at 250 meters/turn.

The base target number for Rigger X's Hiding Test is 6 (the Mach 6's Handling Rating), and the following target modifiers apply:

Base Target Number	*6*
Hiding vehicle's Maneuver Score exceeds opponent's by 10 or less	*–2*
The Mach 6 is exceeding its Speed Rating	*+2*
Restricted terrain	*0*
Rigger X has a Level 2 VCR	*–2*
Final target number	***4***

Rigger X rolls 5 dice for the test (his Car Skill rating is 5). The test yields 4 successes, so the Mach 6 gives Cruiser #1 the slip for the rest of the Combat Turn. In addition, Rigger X receives a 4-point Escape Bonus on his Driver Points Open Tests until the pursuing vehicle relocates the Mach 6 or gives up the attempt.

RELOCATING

Any time a vehicle makes a successful hiding attempt and breaks contact, the pursuing vehicle's character can attempt to relocate the hiding vehicle by making a Relocating Test. To make a Relocating Test, the player makes a Perception Test against a target number equal to the hiding vehicle's Signature. Apply all appropriate target modifiers from the Relocating Target Modifiers Table.

If the test succeeds, the pursuer re-establishes contact with the hiding vehicle. The pursuing vehicle's driver and passengers may take actions against the target vehicle on their next available actions.

Players may attempt to relocate hiding vehicles for as long as they wish.

NPC drivers attempt to relocate hiding vehicles for 5 Combat Turns, then they give up.

RELOCATING TARGET MODIFIERS TABLE

Relocating vehicle's Maneuver Score exceeds hiding vehicle's score by 10 or less	–2
Relocating vehicle's Maneuver Score exceeds hiding vehicle's score by 11 or more	–4
Hiding vehicle's Maneuver Score exceeds relocating vehicle's score by 10 or less	+2
Hiding vehicle's Maneuver Score exceeds relocating vehicle's score by 11 or more	+4
Vehicle exceeds its Speed Rating	+4
Vehicle's autonav is active	– Rating
Hiding Vehicle	+ successes generated on hiding Driving Test

Terrain	
Open	–3
Normal	–1
Restricted	0
Tight	+3

Note: The terrain modifier is based on the terrain type occupied by the hiding vehicle.

Now, Cruiser #1 isn't going to let Racer X simply run off, so the Lone Star driver attempts to relocate the Mach 6.

Rigger X achieved 4 successes on his Hiding Test, so the Lone Star driver's Relocating Test receives a +4 target modifier in addition to all other appropriate modifiers.

MULTIPLE VEHICLE COMBAT

Though the preceding rules work for more than two vehicles, gamemasters may want to group two or more NPC vehicles together if they're cooperating to achieve the same goal (for example, two Lone Star cruisers chasing down a suspected perpetrator). In this case, the gamemaster can make single die rolls for the entire vehicle group. In such cases, use the statistics of the fastest vehicle in the group when determining the Maneuver Score and increase the test target number modifier by 1 for each additional vehicle.

PASSENGER ACTIONS DURING VEHICLE COMBAT

During vehicle combat, passengers can use vehicle electronics, fire vehicle weapons, hang on or shoot or cast spells at other vehicles. If passengers choose to perform any of these actions, they must account for certain restrictions. Because of the chaotic movements of the vehicle during combat, characters may not always be able to act during all their available phases in a Combat Turn. No character except the rigger may take any offensive action (shooting weapons or casting spells) in a Combat Phase higher than the number of Driver Points generated for the vehicle in that turn.

If passengers have Initiative scores higher than the Driver Points of the vehicle they are riding in, they simply lose actions. They cannot hold actions until their turn and still get in their full number of attacks. (Being at the mercy of the rigger means being at her mercy. Vehicle passengers ride along with no control over their surroundings.)

Blade is riding shotgun in the Mach 6 next to Rigger X as the two try to give the slip to two Lone Star cruisers. Doing his own little part in discouraging the cops from following so closely, Blade leans out the window to pop a few caps with his Ares Predator.

Blade, who has wired reflexes, rolled an Initiative of 17 for the turn. Normally, he would receive actions in Phases 17 and 7. However, Rigger X generated only 11 Driver Points on his Open Test. That means no passenger in Rigger X's car can act offensively before Phase 11, so Blade loses his action in Phase 17.

VEHICLE DAMAGE

Vehicles receive damage when they are hit by weapons fire and when they collide with objects such as other vehicles, pedestrians, walls and so on.

Vehicle damage is divided into two categories: impact damage from collisions and ramming attacks, and weapons damage (which includes spell damage).

Condition Monitors are used to track damage to vehicles in the same manner they are used to track damage to characters. Vehicle damage is categorized by the standard condition levels—Light, Moderate, Serious and Destroyed (Deadly), and vehicles receive target modifiers, Initiative penalties and Speed Rating reductions based on their damage status, as shown on the Vehicle Damage Modifiers Table.

The damage target modifier applies to all tests that involve the vehicle itself. The Initiative penalty reduces Initiative results generated for the vehicle's driver. The Speed Rating reduction reduces the vehicle's Speed Rating. Because the vehicle's maximum speed is equal to its Speed Rating multiplied by 1.5, this reduction also applies to a vehicle's maximum speed.

RIGGER DAMAGE

Whenever a vehicle sustains Serious or Destroyed damage, damage is transferred to the rigger driving the vehicle. In such cases, the controlling rigger must make a Damage Resistance Test against 6M Physical damage. If a vehicle is destroyed, the rigger must make a Resistance Test against 6S Physical damage.

VEHICLE CONDITION MONITOR

Light Damage	Moderate Damage		Serious Damage			Destroyed			

VEHICLE DAMAGE MODIFIERS TABLE

Vehicle Damage Level	Target Modifier	Initiative Penalty	Speed Rating Reduction
Light	+1	–1	No reduction
Moderate	+2	–2	25 percent
Serious	+3	–3	50 percent

VEHICLE DAMAGE FROM IMPACT

Impact damage occurs when a vehicle fails a Crash Test or is rammed by another vehicle.

The Damage Level of impact damage is based on the vehicle's speed at the time of impact, as shown on the Impact Damage Levels Table. For a rammed vehicle (see **Ramming,** p. 47), the Damage Level is based on the difference in speed between the two vehicles.

The Power is equal to the speed divided by 10 and rounded up.

When making Damage Resistance tests to resist impact damage, a vehicle's player can use a number of dice equal to the vehicle's Body Rating, as well as any available Control Pool dice. However, the number of Control Pool dice cannot exceed the rigger's Driving Skill. The target number for the test equals the Power of the attack. No armor or any other factor reduces the Power of the attack. For every two successes on the test, reduce the Damage Level by one level.

Rigger X's Mach 6 is traveling at 152 meters per turn when it rams Lone Star Cruiser #2, which is traveling at 300 meters per turn. The calculation for the Power of the resulting damage looks like this:
(300 – 152) ÷ 10 = 14.8, rounded up to 15

As shown on the Impact Damage Levels Table, a collision at 148 meters per turn rates a Damage Level of Serious. Therefore, both the Mach 6 and Cruiser #2 must make tests to resist 15S Damage from the collision.

First, let's look at the Mach 6's test. The Mach 6 has a Body Rating of 3, so Rigger X must roll 3 dice against a Base Target Number of 15. However, Rigger X's Ramming Test yielded 5 successes, which reduces the damage's Power by 15 (vehicle Body Rating x number of successes).

Target numbers cannot be reduced below 2, so the Damage Code is 2S. Rigger X adds 5 dice from his Control Pool, so he rolls a total of 8 dice against a Target Number 2. The Damage Resistance Test generates 6 successes, which stages the damage down to nothing, and the Mach 6 pulls away with nothing more than a scratch or two.

Now let's look at Cruiser #2. The cruiser was the target of the ramming attempt, so the Damage Code of 15S is not reduced. The cop driving the cruiser is an NPC with a Professional Rating 2, so the gamemaster can add 2 dice to the 3 dice for the cruiser's Body Rating 3. Rolling 5 dice against a Target Number 15, the gamemaster generates no successes. Consequently, the cruiser takes Serious damage and must now make a Crash Test.

IMPACT DAMAGE LEVELS TABLE

Vehicle Speed (in m/turn)	Damage Level
1–20	Light (L)
21–60	Moderate (M)
61–200	Serious (S)
201+	Destroyed (D)

Passengers

Passengers may incur damage during vehicle collisions ev when the vehicle itself escapes damage. Passengers must ma the same Damage Resistance Test as the vehicle. Apply all ve cle-related Damage Level reductions before making these test

If a character is wearing a seat belt or other safety restra during the collision, stage down the Damage Level an additio level.

If the vehicle is equipped with an APPS crash-protection s tem, reduce the Power of the attack by one half, rounded up.

If the vehicle is equipped with a crash cage, players may a 6 dice to their Damage Resistance Tests.

Passengers cannot use Combat Pool dice to assist in the t but Control Pool dice used by the rigger in the Crash Test also a to passengers' Damage Resistance Tests. Only impact armor p tects against crash damage.

The Damage Resistance Test for Cruiser #2 didn't stage down the damage, so the two cops riding in the car must make Damage Resistance Tests. The initial Damage Code is 15S, but is reduced as follows:

Cops are wearing seat belts	*Reduce Damage Level by one level [15M]*
Cruiser is equipped with APPS	*Power ÷ 2, rounded up [8M]*
Cops are wearing armor vests (4/3 Rating)	*Reduce Power by 3 [5M]*

That produces a final Damage Code of 5M.

The cops have Body Ratings of 4, so the gamemaster rolls 4 dice for their Damage Resistance Tests.

They don't succeed in reducing the damage, and the two Lone Star boys take Moderate damage.

Crashing

Crashing is a specific type of impact that usually occurs when the driver or rigger has lost control of a vehicle due to unique circumstances. Specifically, Crash Tests are required in the following situations:

- Vehicle takes damage during a ramming action
- Vehicle takes Serious damage in a single attack (including weapon and spell attacks)
- Vehicle's Condition Monitor reaches "Destroyed"

The Crash Test consists of a Driving Test against a base target number equal to the vehicle's Handling Rating. All appropriate target modifiers from the Crash Test Modifiers Table, p. 52, also apply. Both Autonav and Control Pool dice may be used for a Crash Test. A number of dice equal to the Autonav Rating may be used, but the number of Control Pool dice used may not exceed the rating of the Driving Skill used for the test.

If the test fails, the vehicle crashes. The vehicle comes to a complete stop and the player must make another Damage Resistance Test to resist impact damage. (Also see **Passengers,** p. 50.)

Cruiser #2 spins wildly out of control after Rigger X's Mach 6 rams it. Time to see if the Lone Star officer can get this under control before it crashes into the side of a building.

The base target number for the Crash Test equals the cruiser's Handling Rating of 4, but the following target modifiers apply:

Cruiser has taken Serious damage	*+3*
Cruiser's speed (300 m/turn) exceeds the driver's Reaction Rating x 40	*+4*
Driver has taken a Moderate wound	*+2*
Final target number	***13***

CRASH TEST MODIFIERS TABLE

Condition	Modifier
Driver wounded	+ Damage Modifier
Vehicle damaged	+ Damage Modifier
Terrain	
Open	–1
Normal	0
Restricted	+2
Tight	+4
Vehicle Speed	
Less than driver's Reaction x 20	0
Less than Reaction x 30	+1
Less than Reaction x 40	+2
More than Reaction x 40	+4

The gamemaster rolls 5 dice (3 for the driver's Car Skill 3 and 2 for his Professional Rating 2) for the test. The test produces no successes, however, so the vehicle crashes into the side of a building.

How much more damage can the cruiser withstand? Let's find out.

The cruiser was traveling at 300 meters/turn before it crashed, so the Power for the damage is 300 ÷ 10, or 30 (see ***Vehicle Damage from Impact,*** *p. 50). Consulting the Impact Table, crashing at 300 meters/turn results in a damage level of D. Thus, the Damage Code for the crash damage is 30D.*

The gamemaster rolls 3 dice for the cruiser's Body Rating 3. (Though the cruiser has an Armor Rating 6, this does not apply because armor does not affect collision damage.) Not surprisingly, the test generates no successes, so the cop car bursts into a ball of flames as it slams into the nearest wall.

COLLIDING WITH OBJECTS

When vehicles crash, they sometimes collide with other objects, such as walls or pedestrians. Other times, drivers may deliberately ram objects. In either case, the targeted object also takes collision damage.

Individual gamemasters determine exactly which objects crashing vehicles strike, based on the immediate environment, terrain type, time of day and so on.

Walls and Barriers

Walls and barriers are the most common objects with which vehicles collide. In some instances, a vehicle collision may cause enough damage to destroy and collapse a structure. Other times, a vehicle will travel right through a barrier, collapsing it and then continuing on its path of destruction.

To determine what happens in such collisions, compare the Barrier Rating of the wall/barrier with the vehicle's speed at the time of the collision. (Barrier Ratings are listed on p. 98 of **SRII.**) If the vehicle speed is less than or equal to the Barrier Rating mul plied by 20, the vehicle comes to a halt. Use the standard cra rules to resolve vehicle and passenger damage in such cases.

If the vehicle speed is greater than the Barrier Rating mul plied by 20, the wall collapses and the vehicle continues travelin through it. The vehicle loses speed after such a collision, howe er. The speed loss equals the Barrier Rating multiplied by 20.

The Power of the collision damage equals the Barrier Rati of the wall. Use the loss in speed on the Impact Damage Leve Table (p. 50) to determine the Damage Level. If a vehicle brea through a wall or barrier, passengers do not take damage if th are restrained by some kind of safety gear. Any of the passeng safety gear found in **Passengers** (p. 50) reduce this damage.

Cruiser #2 is traveling 300 meters per turn when it crashes and strikes a factory wall. The wall is Heavy Structural Material with a Barrier Rating of 16. The Barrier Rating multiplied by 20 equals 320, which exceeds the cruiser's speed. Therefore, the cruiser crumples and comes to a complete stop against the intact wall.

Vehicle-Pedestrian Collisions

Whenever a vehicle collides with a person or critter, th pedestrian must make a Damage Resistance Test against th Impact damage. The Power of the damage is equal to the spee of the vehicle divided by 10, and the Damage Level is one sta higher than that listed on the Impact Damage Levels Table for th vehicle speed. (For example, a vehicle moving between 1 and meters per turn would inflict Moderate damage on an unluc pedestrian.) If the corresponding Damage Level on the Impa Damage Levels Table is Destroyed, the Power of the att increases by half of its original rating, rounded down.

Pedestrians make standard Damage Resistance Tests to re this damage and may use available Combat Pool dice on the te Impact armor reduces the Power of the damage. Do not stage the Damage Level for critters with hardened armor or characte wearing military-grade armor.

At the same time, the vehicle must also resist dama incurred from hitting the pedestrian. Determine damage as co sion damage; the Damage Level is one stage lower than that li ed on the Impact Damage Levels Table for the vehicle spe (For example, a vehicle moving between 1 and 20 meters p turn would take no damage from the collision, while one mo ing between 21 and 60 meters per turn would resist only Li damage.)

It's Saturday night, and Rex Karz and his pals are out joyriding through the sprawl. Rex is having such a good time that he's not paying enough attention to the road, and suddenly his car is making a wide turn—smack into a group of pedestrians standing on the sidewalk.

The car is traveling at 60 meters per turn, so the collision would normally cause Moderate damage according to the Impact Damage Levels Table. But this is a vehicle-pedestrian collision, so for the pedestrians the

damage is Serious. The Power of the damage is 6 (60 ÷ 10), for a final Damage Code of 6S.

Seems that cars ain't the only things Rex wrecks.

VEHICLE DAMAGE FROM WEAPONS

Whenever a player character fires a weapon at a vehicle, he must specify whether he is shooting at the vehicle itself or at passengers inside the vehicle. The process for resolving damage from the attack depends on the character's declared action.

Attacks Against the Vehicle

If a character is shooting at the vehicle itself, the weapon's Damage Level is reduced by one level (D to S, S to M, and M to L) to reflect the nature of the vehicle. Weapons with a Light Damage Level cannot affect the vehicle, unless special ammunition is used. Grenades and other explosives also face the same Damage Level reduction, but anti-vehicle munitions (missiles, rockets, mortar shells and so on) do not.

Vehicle armor reduces the Power of all attacks by its rating, except for anti-vehicle (AV) munitions. If a weapon's standard Power (unaugmented by burst or full-auto fire rates) does not exceed the armor's rating, the weapons fire does no damage to the vehicle.

Against AV munitions (weapons using a shaped-charged, explosively-formed penetrating warhead specifically designed to take out vehicles), their Damage Level is not reduced. The Power of the AV munitions is only reduced by half the Armor Rating (round down the Armor Rating before calculating the AV munitions Power).

To resist the damage, the vehicle's controlling player makes a Damage Resistance Test for the vehicle. He rolls a number of dice equal to the vehicle's Body Rating and may add any available Control Pool dice. The number of Control Pool dice added may not exceed the character's Driving Skill rating. The test target number equals the modified Power of the weapons attack.

Compare the number of successes generated by both the attacker and the vehicle and determine the damage. Standard staging rules apply. If the attack does no damage and the number of Control Pool dice exceeds the attacker's successes, the attack is a complete miss.

Whenever a vehicle sustains Serious damage from a single attack, the driver must make a Crash Test (see **Crashing,** p. 51). When all the boxes on a vehicle's Condition Monitor are filled, the vehicle automatically crashes.

If a vehicle has a Body Rating of 0 (as in the case of very small drones), any success generated by the attacker automatically destroys the vehicle.

Called Shots and External Components

To fire at a vehicle's external components (such as a tire, antenna or vehicle weapon), a character must make a Called Shot against the component. Do not change the Damage Code of the attack (the standard effect of staging up a Called Shot is negated by the vehicle's Damage Level reduction). Note that certain components, such as external fuel tanks, may have separate Body and Armor ratings.

Normally, the attack must cause Moderate or higher damage to the vehicle to destroy an external component. However, the gamemaster may reduce this damage threshold to Light for fragile components, such as antennas, or increase it to Serious for reinforced ones, such as weapon turrets.

Optional Terrain-Based Control Pool Dice Limits

The use of Control Pool dice on vehicle Damage Resistance Tests simulates a driver's ability to maneuver his vehicle to reduce the damage it takes from an attack.

If desired, gamemasters can take this one step farther and apply the following terrain-based limits on Control Pool dice in their games. These limits apply to Damage Resistance Tests and reflect the various degrees of maneuverability afforded by different terrain.

CONTROL POOL DICE LIMITS

Terrain Type	Control Pool Dice Maximum
Open, Normal	Character's Driving Skill Rating
Restricted	Character's Driving Skill ÷ 2 (round up)
Tight	Character's Driving Skill ÷ 3 (round up)

ATTACKS AGAINST PASSENGERS

If a character is shooting at passengers inside a vehicle, the passengers receive the benefit of protection from the vehicle. Subtract either the vehicle's Armor or Body Rating, whichever is higher, from the Power of the attack. Do not reduce the Damage Level of the weapon, however. Passengers cannot use Combat Pool dice to assist in their Damage Resistance Tests.

A targeted rigger who is jacked into a vehicle receives a +3 target modifier on his Damage Resistance Tests. (A rigger's consciousness is not focused on his body while he is jacked in.)

Any passenger attack with a Deadly Damage Level also inflicts Light damage against the vehicle. The damage occurs at the same time as the attack on the passenger and cannot be resisted.

VEHICLES AND MAGIC

Only physical spells, which produce physical effects, affect vehicles. Mana spells do not affect vehicles, even if they are being controlled by the living mind of a rigger. Likewise, mana spells have no effect on a rigger jacked into a vehicle, unless the casting magician can actually see the rigger. See **Spells against Characters in Vehicles,** p. 54.

Spells cast against vehicles have a Target Number of 8, due to the complex technological and electronic nature of a vehicle. The vehicle's driver makes a normal Damage Resistance Test for the vehicle, using the vehicle's Body. The target number for the Damage Resistance Test equals the spell's Force modified by armor. Magicians can allocate spell defense dice to protect a vehicle against such attacks.

If the casting magician's Spell Success Test generates more successes than the vehicle's Spell Resistance Test, the spell takes effect.

Vehicles are single, complete entities. A vehicle's wheels, windshield, antenna and other accessories are interrelated components. Therefore, magicians cannot use magic to target individual portions of a vehicle. A single-target combat spell affects the entire targeted vehicle and all of its components and accessories. An area-effect spell affects the entire targeted vehicle, as well as its passengers and cargo.

DAMAGING MANIPULATION SPELLS

Damaging manipulation spells create a physical effect, then throw the manifestation of that effect around an area in a random, unfocused manner. If compared to mundane weapons, damaging manipulations function like standard high explosives, rather than like anti-vehicle munitions, which direct the energy in a focused manner to penetrate vehicle armor and mass bulk.

Damaging manipulation spells, therefore, are treated as normal weapons. Stage down the Damage Level by one step (D to S, S to M and so on), and reduce the Force (or Power) of the spell by the vehicle's Armor Rating. Unfortunately for the magician, this means that the spell may have no effect even before it leaves his or her hands.

COMBAT SPELLS

Combat spells, on the other hand, by their very intent, *do* target the vehicle and so are treated as anti-vehicle weapons. They do not suffer the same reduction in Power Level as damaging manipulation spells. In addition, since a combat spell attacks a vehicle from the inside out, and thus bypasses the normal routes of attack, the Force (or Power) of the spell is reduced by only half the Armor Rating (because a combat spell's attack is through the vehicle's aura, and since armor is an integral part of the vehicle, armor does have a limited effect).

In other words, do not reduce the Damage Level of damage from a combat spell, and only reduce the Force (or Power) of the spell by half the vehicle armor, rounded down.

Because of their "inside-out" nature, combat spells will always cause damage even if the vehicle's armor would reduce the spell's force to 0. For example, if the Armor Rating is greater than twice the Force of the spell, the player must still make a Spell Resistance Test for the vehicle against a Target Number of 2 (Armor 4 ÷ 2 = 2, and the Force of the spell is 2). Of course, if the Force of the spell is reduced to 1, the target number for the Spell Resistance Test would still be 2.

SPELLS AGAINST CHARACTERS IN VEHICLES

Magicians can use spells to selectively target passengers or drivers of vehicles, provided that the magician has a clear line of sight to his target. Motorcycle riders and drivers or passengers in other open or open-topped vehicles are examples of vulnerable targets. Similarly, any object that is not a part of the vehicle and is visible can be targeted with a spell.

Drivers and passengers who are enclosed completely inside a vehicle cannot be targeted with spells, because the vehicle obscures them.

A spell, other than a damaging manipulation spell, will not work unless the caster has a direct line of sight to his target; merely knowing someone is inside is not good enough. Nearly every vehicle in the 2050s comes with adjustable tinted windows which allow the driver and passengers a full unrestricted view out of the vehicle, while blocking anyone outside from seeing *in*. This means a magician riding in a vehicle can cast spells *through* the windows at targets outside, while remaining protected from spells.

Nick Nightmare is roaring through the Seattle night on his Aurora racing bike, with visions of barely legal debauchery in his tiny mind. Unknown to Nick, a wiz-kid mage has erected a barrier spell in Nick's path, and Nick races blindly into it.

What happens next depends on what type of barrier spell the mage has cast. If it's a physical barrier spell, both Nick and his Aurora crash into the barrier. Resolve damage as if Nick had crashed his motorbike into a wall.

If the wiz kid casts a mana barrier spell, strange things occur. The Aurora is an inanimate object, so the spell does not affect it, and it races on into the night unimpeded. Nick, on the other hand, is alive (at the time of impact, anyway) and hits the mana barrier just as if he hit a wall. Nick flies backward off his motorbike and takes damage as if he had hit a wall with a Barrier Rating equal to the spell's Force.

Now, suppose Nick was driving a Eurocar Westwind 2000. If the wiz kid casts a mana barrier spell, Nick and the vehicle drive through without a scratch. In this case, the aura of the sports car encloses and obscures Nick from the wiz kid's line of sight, so the mana barrier has no effect on Nick.

Of course, a magician outside an enclosed vehicle can get around the line-of-sight problem by blowing out the vehicle's windows (or having his hired guns do so). Even so, this may not completely solve the problem—it may fail to provide a sight line or provide only a limited sight line that produces a +4 Partial Cover target modifier for the Spell Test.

Individual gamemasters determine the exact effects of blowing out vehicle windows in such cases. As a rule of thumb, blowing out the windows of cars, trucks, buses and most other ground vehicles provides unimpeded lines of sight to characters inside the vehicle. Blowing out the windows of campers or other vehicles with limited window space provides limited lines of sight; in these cases, the +4 Partial Cover modifier applies. The visual slits of an armored car are too small for anyone on the outside to look in, so blowing out the protective glass is a waste of ammunition. And finally, most armored personnel carriers use electronic cameras or reflective periscopes—so they have no windows to blow out!

VEHICLES AND NATURAL DOMAINS

Vehicle drivers and passengers are considered to be in the same natural domain as that of the vehicle in which they are traveling. Therefore, they are equally vulnerable to the powers of a nature spirit as the vehicle itself. Shamans do not need lines of sight to command nature spirits to use their powers against passengers inside a vehicle, provided that *both* the shaman and the vehicle are in the spirit's domain. If a shaman leaves the spirit's domain, she forfeits any remaining services the spirit owes her (though the spirit will continue to carry out the last command given it). Likewise, if the vehicle leaves the spirit's domain, the spirit can no longer act against the vehicle or its passengers, unless it is a great nature spirit or a toxic nature spirit (both of which are capable of crossing domains).

Tricky, a Raccoon shaman, is fleeing on her motorbike from a couple of gangers chasing her in a Ford Americar. Making a sharp hairpin curve at King Street, she makes another hairpin turn and turns into a blind alley. The gangers miss her second hairpin turn and go roaring on down King Street. Tricky knows the gangers will double back as soon as they realize their mistake, so she decides to call for some help and summons a city spirit.

Both Tricky and the gangers are on the city streets, which puts them within the domain of the city spirit, so Tricky orders the spirit to use its Fear power on the gangers. Though Tricky can't see the gangers and has no idea where they are, as long as they're out on the streets the spirit will find them. Being inside the car is no help, because the car is still within the domain of the city. However, if Tricky decides to take a shortcut through a building (a Hearth domain), she can no longer order the spirit to act against the vehicle or its occupants. Similarly, if the gangers decide to take a shortcut through the city park (a Forest domain), Tricky cannot command the city spirit to act against them while they remain inside the park.

CASTING MAGIC FROM VEHICLES

The continually shifting motion of a moving vehicle makes it difficult for a magician to achieve and maintain lines of sight to targets outside a moving vehicle.

To reflect this difficulty, add the following additional modifiers to Spell Tests made by magicians attempting to cast spells from moving vehicles against characters or objects outside the vehicle.

MOVING VEHICLE SPELL MODIFIERS TABLE

Moving in Open/Normal terrain	0
Moving in Restricted terrain	+2
Moving in Tight terrain	+4
Moving in a combat environment	+2

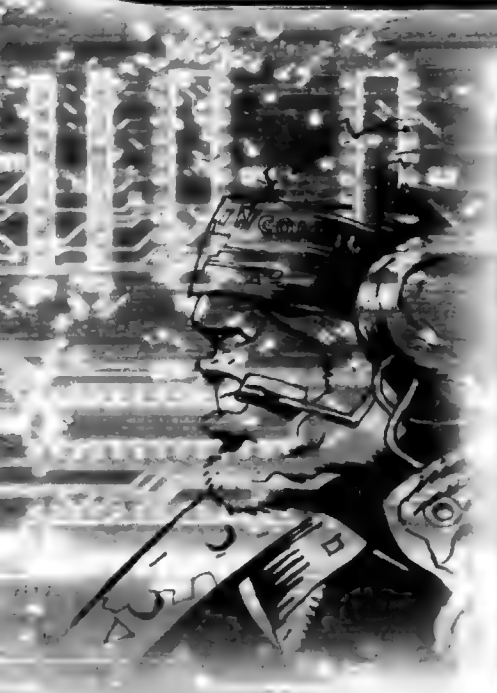
ASTRAL PROJECTION FROM VEHICLES

Though magicians can easily project while their meat bodies are in motion, they may have problems returning to their bodies. Unless the magician knows the vehicle's destination or travel route, he will have to search for his physical shell (p. 146, **SRII**). And even if the magician knows the vehicle's travel route, returning to his shell will take some time, and re-integrating his astral and physical bodies is very difficult if his physical body is still in motion.

Therefore, a moving magician must make an Intelligence (8) Test to return to his body. If the test succeeds, the magician returns to his physical body. If not, the astral form misses the physical, and the magician must try again.

Remember that a character's normal movement speed in astral space is his Astral Quickness Rating multiplied by 4. In many instances, vehicles in the physical world can easily outpace astral movement speeds, so magicians generally cannot follow vehicles from astral space. (To do so, a mage would have to resort to his fast movement rate, and at that rate magicians cannot see in sufficient detail to follow anything closely.)

VEHICLE GUNNERY



The vehicle gunnery rules are used to resolve fire from all vehicle-mounted weapons, whether the weapons are being fired by gunners, by riggers jacked into vehicles or controlling drones, or by self-operating drones. Manual gunnery rules apply when characters fire vehicle weapons without the aid of sensors. Sensor-enhanced gunnery rules apply when a vehicle's sensors are used to aim vehicle weapons.

This section also provides rules for missiles and indirect-fire attacks.

MANUAL GUNNERY

Manual gunnery rules apply whenever characters fire personal or vehicle weapons without the aid of sensors. (Note that riggers jacked into vehicles may use the manual gunnery rules to fire vehicle weapons.)

Though a manually aimed weapon may not be as accurate as a sensor-aimed weapon, the manual aiming method does not increase the firing vehicle's Signature as does the sensor-aiming method, and is not susceptible to ECM and ED.

Whenever a character manually aims and fires a weapon, the player makes a Manual Gunnery Test. Standard Ranged Combat rules apply (pp. 87–92, **SRII**). However, the target number modifiers listed in the Manual Gunnery Modifiers Table, p. 57, replace the standard Ranged Combat modifiers (p. 89, **SRII**).

MANUAL GUNNERY MODIFIERS

Condition	Modifier
Blind Fire	+8 (see p. 89, **SRII**)
Target has Partial Cover	+4 (see p. 89, **SRII**)
Smartlink	
Level I	–2
Level II	See **Table Key**
Aimed Shot	–1 per Simple Action
Image Magnification	See p. 240, **SRII**
Visibility	See **Visibility Table** (p. 89, **SRII**)
Multiple Targets	+2 per additional target that Combat Phase (see p. 90, **SRII**)
Attacking Drone Walking	+1
Difficult Ground	+2
Attacking Drone Running	+4
Difficult Ground	+6
Target Running	+2 (see p. 90, **SRII**)
Target Stationary	–1 (see p. 90, **SRII**)
Attacker Wounded	Per Damage Level (see p. 112, **SRII**)
Recoil	
Semi-Automatic	+1 for second shot during phase
Burst Fire	+3 per burst fired during phase
Automatic Fire	+1 per round fired during phase
Heavy Weapons Fire	2 x uncompensated recoil
Recoil Compensation	See **Table Key**
Firing Unmounted Weapons	+2
Relative Motion between Attacker and Target	
Moving Toward	–1
Moving Away	+1
Maneuver Score Difference	
Attacker's Maneuver Score exceeds target's Maneuver Score by more than 10	–1
Target's Maneuver Score exceeds attacker's Maneuver Score by more than 10	+1
Attacker Damaged	Per Damage Level
Relative Speeds of Attacker and Target	
Roughly equal	0
Up to 2x speed difference	+2
Up to 3x speed difference	+4
More than 3x speed difference	+6
Size/Type of Target	
Human/metahuman	0
Human-sized Critter	0
Small Critter (smaller than 1/3 the size of a human)	+1
Large Critter (larger than 3x the size of a human)	–1
Small Drone	+1
Motorcycle	0
Automobile	–1
Limousine/Light Truck	–1
Heavy Truck/Tractor-Trailer	–3
Regular Boat	–1
Luxury Yacht	–3
Freighter/Oil Tanker	–8
Ultralight Glider	0
Fixed-Wing Aircraft	–2
Commercial Airliner	–6
Helicopter	–2
LTA Aircraft (Zeppelin)	–6
LAV (t-bird)	–3
Security/Military Ground Vehicle	–3

MANUAL GUNNERY MODIFIERS TABLE KEY

Smartlink: Smartlink modifiers apply only if both the gunner and the vehicle weapon are outfitted with smartlink hardware. Smartlink Level I is the default smartlink found in **SRII.** Smartlink Level II is described in the **Fields of Fire** sourcebook and operates under special rules and certain conditions (see pp. 84–85, **Fields of Fire**).

Recoil Compensation: In addition to any recoil compensation provided by recoil-compensation accessories fitted to a weapon, vehicle weapon-mounts also provide recoil compensation. Pintle mounts grant –2 recoil compensation; ring mounts grant –6 recoil compensation. For weapons mounted on fixed mounts and turrets, reduce recoil by half (rounded down) before applying recoil compensation provided by weapon accessories. (Note that this compensation cancels out the double-uncompensated recoil modifier for heavy weapons (p. 89, **SRII**)). See also **Vehicle Weapon Mounts**, page 131.

Firing Unmounted Weapons: A +2 modifier applies if a character in a vehicle is firing a weapon that is not mounted in a vehicle mount. A common example of this is a passenger leaning out of a window firing a handgun.

Attacking Drone Walking/Running: These modifiers apply only if the drone is propelling itself with mechanical legs.

Relative Motion: If the attacker and target are moving toward each other (or one is overtaking the other) reduce the Motion modifier by 1. If the attacker and target are moving away from each other (or one is outrunning the other), increase the modifier by 1.

Note that the Relative Motion modifier may not apply if both attacker and target are moving at roughly equivalent speeds. If the attacker and target are moving along the same axis of travel, the modifier does not apply. If the attacker and target are moving at right angles to each other, however, it does.

Attacking Vehicle Damaged: If the attacking vehicle is damaged, apply the appropriate damage modifier, based on the Damage Level on the Vehicle Condition Monitor. Vehicle damage mod-

ifiers are cumulative with character damage modifiers for Physical or Stun Damage. (See **Vehicle Damage,** p. 49.)

Relative Speed: To determine the Relative Speed modifier for a weapon attack, compare the speeds of the attacker and target. If either vehicle's speed is less than 5 meters per turn, round the speed up to 5; if both attacker and target are moving at speeds less than 5 meters per turn, treat the attack as standard Ranged Combat.

SENSOR-ENHANCED GUNNERY

Sensor-enhanced gunnery makes use of the vehicle's sensors to improve the aiming of vehicle weapons. Though sensor-enhanced aiming produces more accurate fire than manual aiming, sensor-enhanced gunnery is susceptible to ECM and ED.

Sensor-enhanced gunnery is also the aiming method used by drones that are not directly controlled by a rigger.

To use sensor-enhanced gunnery, the attacking vehicle or drone must first make a successful Sensor Test to detect the target with its sensors (see **Sensor Test**, p. 28). One success on the Sensor Test is enough for a weapons lock. Making a Sensor Test constitutes a Complex Action.

After the weapon has locked on to the target, the attacking player makes a Sensor-Enhanced Gunnery Test. The player rolls a number of dice equal to the character's Gunnery Skill *plus* half the vehicle's Sensor Rating (round down). Combat Pool dice may be added as well. Drones, when not controlled by a rigger, use their Pilot Rating in place of the Gunnery Skill.

The test target number is equal to the target's Signature, modified by the appropriate target modifiers from the Sensor-Enhanced Targeting Modifiers Table. Making a Sensor-Enhanced Gunnery Test constitutes a Complex Action.

If the attacking vehicle's sensors cannot lock onto the target for any reason, the attacker may not make a sensor-enhanced gunnery attack.

SENSOR-ENHANCED TARGETING MODIFIERS TABLE

Condition	Modifier
Urban environment	+2
Direct LOS	–3
Interrupted LOS	0
ECM in use	Variable
ECCM in use	Variable
ED in use	Variable
ECD in use	Variable
Recoil	
Semi-Automatic	+1 for second shot during phase
Burst Fire	+3 per burst fired during phase
Automatic Fire	+1 per round fired during phase
Heavy Weapons Fire	2 x uncompensated recoil
Recoil Compensation	Special
Attacker wounded	+ Damage Modifier
Attacking vehicle damaged	+ Damage Modifier

SENSOR-ENHANCED TARGETING MODIFIERS TABLE KE

Urban Environment: This modifier applies when comb occurs in a major industrial area, such as a large city, indust plant or other non-residential area of a sprawl.

Direct LOS: The Direct LOS modifier applies only if a cle continuous straight line can be traced between the gunner and t target, with nothing blocking the view. This generally occurs o in ground-to-air and air-to-ground attacks. For ground-to-grou attacks, this modifier applies only when the target is sitting clear, open terrain.

Interrupted LOS: The Interrupted LOS modifier applies most ground-to-ground attacks. In this case, a number of thi (smoke, foliage, trash dumpsters) may block the line of sig between the attacker and target.

ECM/ECCM in use: ECM modifiers increase the Gunnery T target number by the number of successes the jammer has gene ed on his Electronic Warfare Test. ECCM modifiers counteract E successes and also require an Electronic Warfare Test. ECM a ECCM modifiers apply only if the attacking vehicle is inside an E field other than its own. See **Electronic Countermeasures,** p. 3

ED/ECD in use: ED modifiers increase the Gunnery Test t get number by the number of successes the deceiver has gen ated on his Electronic Warfare Test. ECD modifiers counteract E successes and also require an Electronic Warfare Test. S **Electronic Deception,** p. 32.

Recoil Compensation: In addition to any recoil compen tion provided by recoil-compensation accessories fitted t weapon, vehicle weapon-mounts also provide recoil compen tion. Pintle mounts grant –2 recoil compensation; ring mou grant –6 recoil compensation. For weapons mounted on fi mounts and turrets, reduce recoil by half (round down) be applying recoil compensation provided by weapon accesso (Note that this compensation cancels out the double-uncomp sated recoil modifier for heavy weapons (p. 89, **SRII**)). See **Vehicle Weapon Mounts**, page 131.

Attacking Vehicle Damaged: If the attacking vehicle is d aged, apply the appropriate damage modifier, based on Damage Level on the Vehicle Condition Monitor. Vehicle dam modifiers are cumulative with character damage modifiers Physical or Stun Damage. (See **Vehicle Damage,** p. 49.)

Steeler (Gunnery 4) is rigged into the Airstorm (a t- bird with Sensor Rating 3 and a turret-mounted heavy machine gun) and is providing air support for a column of merc armored vehicles. As he clears the crest of a hill, his sensors detect a Striker light tank patrolling the road ahead. Steeler decides it's time for the Airstorm to pour some lead rain on the tank's parade, so he makes a Sensor Test to lock on to the tank.

The test succeeds, so Steeler decides to use sensor-enhanced gunnery against the Striker tank. The base target number for the Sensor-Enhanced Gunnery Test is 3 (the targeted tank's Signature). If we momentarily ignore modifiers for recoil, the target number receives a –3 modifier because the Airstorm has a direct line of sight to the target. That produces a result of 0, which is round-

ed up to 2 because no target number can be less than 2. Steeler's player rolls 5 dice for the test—4 for Steeler's Gunnery Skill Rating of 4, plus 1 for the Airstorm's Sensor Rating (3 ÷ 2 = 1.5, which rounds down to 1).

Meanwhile, on the ground, Sgt. Juan, one of the mercs Steeler is supporting, detects the Striker on his vehicle's sensors and decides that Steeler shouldn't have all the fun. Sgt. Juan must make his Gunnery Test against a Target Number 3, however; he doesn't receive the line-of-sight modifier because ground clutter and intervening terrain features partially obscure the Striker from the sensors on Sgt. Juan's vehicles.

MISSILE COMBAT

Missile fire follows slightly different rules than standard sensor-enhanced gunnery, because missiles have their own smart circuitry that allows them to alter their trajectories in mid-flight (and slightly slows their flight times).

Before firing a missile at a target, the attacker must first detect and lock on to the target with his vehicle's sensors using a Sensor Test (p. 28). If the vehicle's sensors do not detect the target, missile fire will not strike it. One success on the Sensor Test indicates a lock.

After locking on to the target, the attacker makes a Missile Attack Test using a number of dice equal to the character's Gunnery Skill Rating, plus the missile's Intelligence Rating. Apply all appropriate modifiers from the Sensor-Enhanced Targeting Modifiers Table on page 58. ECM modifiers apply if the missile passes through ECM fields during any part of its flight.

Unlike bullets and other small projectiles, missiles do not travel at near-instantaneous speeds. All missiles reach their targets at the end of the Combat Turn (i.e., Combat Phase 0, after all players have completed all their actions), regardless of the Combat Phase in which the missile is launched. Characters firing missiles make their Enhanced Gunnery Tests during Combat Phase 0. Use standard damage rules to resolve missile damage to living creatures. For missile damage to vehicles and inanimate structures, use the rules in **Vehicle Damage from Weapons**, page 53.

Note that the following missile-combat rules apply to missiles only. Rocket attacks are resolved with Manual Gunnery or Sensor-Enhanced Gunnery rules because rockets do not have Intelligence Ratings.

MISSILE FIRE MODES

Missiles may be fired in "continuous lock" mode or "fire-and-forget" mode. Continuous lock mode requires the gunner to maintain a positive lock on the target during the missile's flight. Fire-and-forget requires a target lock only at the missile's launch.

Continuous Lock Mode

Continuous lock mode improves the chances of a hit but restricts the firing vehicle's maneuverability, because the rigger must maintain sensor contact with the target at all times. Additionally, the rigger cannot attack other targets until the missile strikes at the end of the Combat Turn.

If a gunner chooses to fire a missile in continuous lock mode, he may add half the Sensor Rating of his vehicle (rounded down) to the missile's Intelligence Rating. However, all other Driving Tests made during the turn receive a +2 target modifier.

Fire-and-Forget Mode

The fire-and-forget mode allows an attacker to fire at other targets during the turn of the missile launch and to continue to maneuver his vehicle without restriction. When firing a missile in this mode, the attacker needs to establish a target lock only at the time of firing. However, the attacker cannot add Sensor dice to the missile's Intelligence.

INDIRECT FIRE

The indirect fire rule allows a drone, vehicle or shadowrunner on the ground to acquire a target lock for a weapon that is in a different location. This enables a weapon to fire on a target when it does not have line of sight to or a sensor lock on the target.

The indirect fire rule may be used with drones, mortars and Ballista missile launchers (see **Fields of Fire**), and other general artillery weapons.

To use indirect fire, the spotter, weapon and rigger's remote control deck must be equipped with the BattleTac Fire Direction Data Manager (FDDM) (see **New Toys,** p. 136). Spotters can also use other target designator devices such as laser sights and laser, microwave and radar designators to lock on to targets for indirect fire. (For more information on these devices, see p. 60, **Fields of Fire.**)

Additionally, characters may take the new Indirect Fire Concentration of the Gunnery Skill to increase their effectiveness as spotters.

Resolving indirect fire is a two-step process. First, the spotter (not the rigger or character who is firing the actual weapon) makes an Indirect Fire Test to lock on to the target. If the spotter does not have the Indirect Fire Concentration, he may use his Gunnery Skill, but the test suffers a +2 target modifier.

The spotter rolls a number of dice equal to his Indirect Fire Concentration (or Gunnery Skill Rating), plus half the Sensor Rating of the missile (rounded down), plus the missile's Intelligence Rating. The test target number is equal to the target's Signature Rating. The spotter may not use Combat Pool dice for the test, but gamemasters may manipulate the target number to reflect the spotting device and weather conditions. See the Visibility Table (p. 89, **SRII**) for sample modifiers.

If the Indirect Fire Test fails, the missile cannot be launched against the target. However, the missile may be used for an area-effect attack (see **Area-Effect Attacks**). In any case, the test constitutes a Complex Action.

After the missile is launched, the spotter must keep the sensor or target designator locked on to the target until the missile strikes at the end of the Combat Turn. During the turn, the spotter receives a +2 modifier to all other Success Tests. If the spotter loses contact with the target, the missile scatters (see **Area-Effect Attacks**). Characters using a target designator may attack with another weapon, but they suffer the Second Firearm modifier when doing so (see p. 90, **SRII**).

The second part of the indirect-fire process consists of a standard Missile Attack Test made by the attacking player (not the spotting player). Apply all appropriate modifiers from the Sensor-Enhanced Targeting Modifiers Table (p. 58). ECM modifiers apply if the missile passes through ECM fields during any part of flight.

Combat Pool dice cannot be used on the Missile Attack T but the attacker can add a number of dice equal to the numbe successes generated on the spotter's Indirect Fire Test.

Molyneaux is a forward observer for a shadowrun team making a run against a corporate research park. As the team exits a building in the park, Moly spots a corporate armored transport moving in to cut off his advance. Moly radios the team rigger, Tubbs, and requests some fire support. Tubbs tells Moly to paint him a target.

Moly pulls out a laser designator and points it at the transport. To see if Moly gets a lock on the armored transport, Moly's player rolls 6 dice (5 for Moly's Indirect Fire Skill Rating of 5 and 1 for the Sensor Rating of the anti-vehicle missile), against a Target Number 3 (the targeted armored transport has a Sensor Rating of 3). Moly's Indirect Fire Test generates 3 successes, so the target lock is achieved.

Tubbs immediately fires a laser-guided anti-vehicle missile. To resolve the attack, Tubbs' player makes a Missile Attack Test. The player rolls 13 dice (6 for Tubbs' Gunnery Skill Rating of 6, 4 for the missile's Intelligence Rating of 4, and 3 for the 3 successes from Moly's Indirect Fire Test.) The Target Number for the test is 6, reflecting the Citymaster's improved Signature.

Area-Effect Attacks

Area-effect missile attacks occur in the following circumstan

- The spotter's Indirect Fire Attack Test fails and he ca lock on to the target
- The spotter cannot maintain the target lock until Phase the turn
- The desired targets are spread over a wide area and no gle vehicle is targeted
- Targeted object or area has no Signature
- Attack is made without a target designator

Target numbers for Area-Effect Tests are listed in the A Effect Target Numbers Table, p. 61. If no target designator used to guide the missile, use the appropriate target number f the Vehicle Sensor Only row.

If the area-effect attack occurred because the spotter's ta lock was interrupted after the spotter made a successful Indirect Test, calculate the target number as if the spotter had used a t target designator. Successes generated on the Indirect Fire Test not be used in the Missile Attack Test for damage in such cases

Indirect area-effect missile attacks always scatter. The sc distance is determined by the range between the spotter's de nator or the vehicle sensor and the target, as shown on the Re Gunnery Scatter Table, p. 61. To determine the exact scatter, player firing the missile makes a Gunnery Test. Combat Pool may be used on the test, but Sensor and Missile Intelligence may not. Each success generated on this test reduces the sc distance. For short- and medium-range targets, each suc

AREA-EFFECT TARGET NUMBERS TABLE

	Range (in meters)/Target Number			
Targeting Device	**Short/4**	**Medium/5**	**Long/6**	**Extreme/9**
Laser Designator	50–300	301–1,500	1,501–3,000	3,001–5,000
Microwave Designator	50–500	501–2,500	2,501–5,000	5,001–8,000
Radar Designator	50–500	501–3,000	3,001–6,000	6,001–10,000
Vehicle Sensor Only	100 to (Flux x 200)	(Flux x 200) to (Flux x 500)	(Flux x 500) to (Flux x 2,000)	(Flux x 2,000) to (Flux x 4,000)

REMOTE GUNNERY SCATTER TABLE

Range	Scatter
Short	2D6 x 2 meters
Medium	2D6 x 5 meters
Long	3D6 x 15 meters
Extreme	3D6 x 40 meters

reduces the scatter by 4 meters. For long- and extreme-range targets, each success reduces the scatter by 15 meters. If the final scatter result is 0 meters or less, the missiles strike the target directly.

Determine scatter direction with the standard Scatter diagram (p. 97, **SRII**).

Use standard damage rules to resolve missile damage to living creatures. For missile damage to vehicles and inanimate structures, use the rules in **Vehicle Damage from Weapons**, page 53.

As the anti-vehicle missile takes out the transport, a burst of gunfire from the left draws Moly's attention to a squad of corporate troops advancing on his team from 250 meters away. Molyneaux radios Tubbs again and asks for an anti-personnel missile this time.

Rather than locking on to one of the corporate troopers in the group, Moly decides to target the squad's center of mass. With Moly's laser designator, the troops are at short range (Target Number 4).

Tubbs's player then makes a Gunnery Test to fire the missile. The test generates only 3 successes.

The gamemaster determines the scatter (2D6 x 2), which comes out to 16 meters. However, Tubb's Gunnery Test generated 3 successes, so he can reduce the scatter by 3 x 4 meters, or 12 meters. That means the missiles strike 4 meters away from the squad's center of mass.

SIGNATURE

A vehicle's Signature Rating indicates the vehicle's vulnerability to electromagnetic or thermal detection and its ability to evade or "fool" smart weapons.

The Signature Rating of a vehicle is used as the target number for all attacks made against the vehicle with all "smart weapon" systems and sensor-enhanced weapons. Smart weapons are missiles and vehicle weapons that are guided by a vehicle's sensors.

Because vehicle sensor systems include imaging and tracking devices that compensate for variables such as range, target and attacker's motion, most standard target modifiers do not apply. However, sensors are vulnerable to electrical interference, electronic countermeasures and other factors, so target modifiers related to these factors do apply. Applicable modifiers are listed on the Sensor-Enhanced Targeting Modifiers Table (p. 58).

Signature Ratings for vehicles are provided in the **Vehicle List** (p. 148).

SIGNATURES OF BIOLOGICAL FORMS

The base Signature Rating for humans and metahumans is 6. Gamemasters may determine the Signatures of critters based on their sizes. As a general rule, a critter that is three times larger than a human has a Signature of 5. A critter that is six times larger than a human has a Signature of 4, and so on. Similarly, a critter that is three times smaller than a human has a Signature of 7; a critter that is six times smaller, a Signature of 8 and so on.

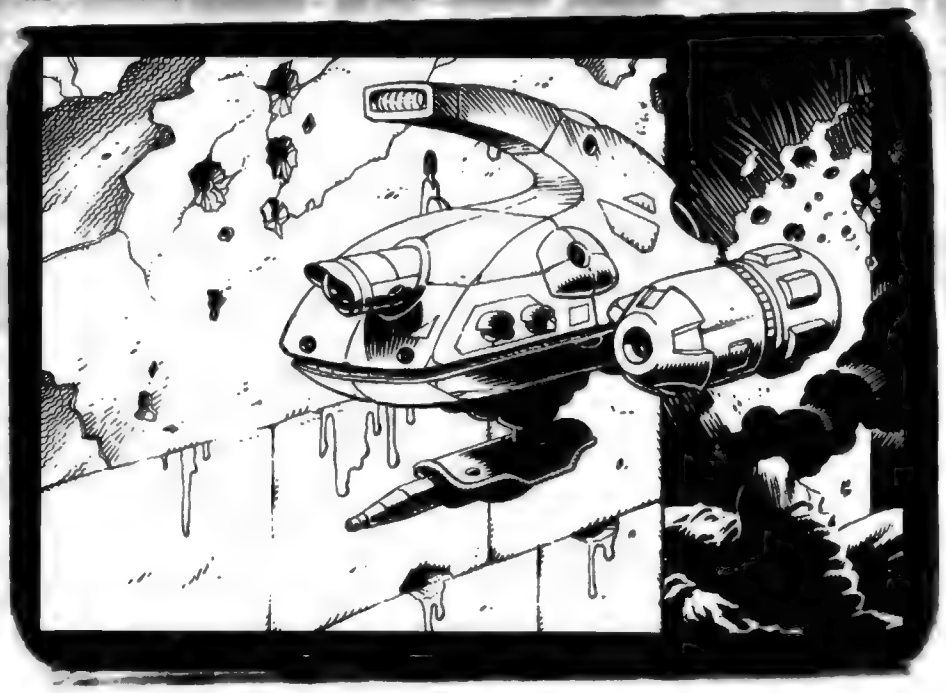
Targets with high Signatures are more difficult to hit. Targets with lower Signatures can be hit more easily.

Signatures for some common critters are listed on the Critter Signature Ratings Table.

CRITTER SIGNATURE RATINGS TABLE

Critter	Signature
Cockatrice	8
Barghest	7
Harpy	7
Sasquatch	6
Thunderbird	6
Eyekiller	5
Griffin	5
Merrow	5
Phoenix	5
Unicorn	5
Kraken	4
Naga	4
Dracoforms	3

DRONES



Riggers can control unmanned vehicles (known as *drones*) via remote control networks. Additionally, riggers can use remote control networks to control robots—drones equipped with mechanical arms, legs and other specialized appendages. This section provides rules for using drones and remote control networks.

Remote control networks also enable riggers to control building security systems. Rules for this use of remote control networks are provided in **The Security Rigger** (p. 77).

REMOTE CONTROL NETWORKS

A remote control network consists of two fundamental elements: a remote control (RC) deck and drones. The RC deck is the central control station, from which the rigger monitors and directs the movements of drones connected to the network. The RC deck also maintains the electronic integrity of the network by ensuring stable data flow and employing active countermeasures to keep out unwanted intruders.

Because of the vast amount of data being transmitted over the airwaves, remote control networks actually use three separate radio channels to command and control drones: the command, simsense and system channels. For more information about how these channels operate, see **Electronic Warfare**, p. 68.

SUBSCRIBER LISTS

An RC deck's subscriber list is a file that enables the deck to identify all the drones under its control. Only drones listed on an RC deck's subscriber list can connect with the deck. This helps protect the network from unwanted intruders who may attempt to intercept network communications and feed it false information or even seize control of the system (see **Signal Interception**, p. 68).

A subscriber list can contain a number of drones equal to twice the RC deck's rating. However, a deck can actively control only a number of drones equal to its rating.

All network drones operate under *affiliated* or *non-affiliated* status. Any drone that is under the direct control of an RC deck is affiliated with that deck. Affiliated drones can receive

DIAMOND
CYRO
SYSTEMS
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FASA
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commands from the remote control deck and transmit data to it and to other affiliated drones.

A non-affiliated drone is operating independently of the RC deck. Consequently, a rigger controlling a network can neither see through nor control the non-affiliated drone. Additionally, the non-affiliated drone cannot communicate with any other drones in the network.

The act of affiliating or disaffiliating a drone requires a Simple Action. Therefore, substituting a non-affiliated drone for an affiliated drone requires 2 Simple Actions or a single Complex Action (1 Simple Action for disaffiliating the first drone and 1 for affiliating its substitute). A drone may not act during the Combat Turn in which it is being affiliated.

Josie Cruise has a Rating 4 remote control deck. The deck's subscriber list can hold transmission information for up to eight drones, but the deck enables Josie to actively control only four at any one time. Josie has six subscriber drones on her list: her command van, an aerial surveillance drone, two armed aerial spotters and two armed ground patrol vehicles (GPVs).

Currently, Josie is performing reconnaissance for her shadowrunner team. She's affiliated her command van, the surveillance drone and the two aerial spotters, which gives her team considerable aerial coverage. As the team makes its way into the main factory, one of the spotters detects a security response team bearing down on the runners. Josie decides to engage the security forces with some suppressive fire and buy her teammates a little more time.

Rolling for Initiative, she generates a 19, which gives her two actions for the Combat Turn. She spends her first Simple Action disaffiliating her surveillance drone in favor of a GPV. She spends her second Simple Action affiliating the GPV, so she will be able to use the GPV during her next Combat Phase.

HARDWIRING A REMOTE CONTROL DECK

Hardwiring a remote control deck to a vehicle is the act of permanently affiliating the two components. Hardwiring a deck and vehicle provides three main benefits. First, a hardwired deck can draw power from the vehicle's alternator or battery to augment its internal power source. Second, a hardwired configuration provides the rigger with the protective benefits of the vehicle while she is jacked into the remote control network, and enables the driver to run the vehicle while jacked into the RC deck. Finally, a hardwired remote deck can increase its Flux Rating by half the vehicle's Body Rating, rounded down.

Vehicles must be adapted for rigger control and equipped with electronics ports (see **Electronics Port**, p. 139) before they can be hardwired to remote decks. Vehicles that are hardwired to decks cannot be disaffiliated.

See **Vehicle Design and Customization,** p. 126, for more information on adding a remote control deck to a vehicle.

DUMP SHOCK

Because vehicle control rig jacks are connected to riggers' m dle brains, the effects of dump shock on riggers can be considera more serious than the effects of dump shock on a decker.

Any time a rigger is dumped from a remote control netwo the following three conditions occur:

- The rigger must overcome the normal effects of disorien tion for 10 Combat Turns.
- During the 10 turns, all of the rigger's Success Tests rece a +2 modifier.
- The rigger must also resist (RC deck Rating + 4)S Stun da age from neural biofeedback.

A rigger can reduce the duration of these disorienting eff by making a Willpower Test against a Target Number 4. Divide number of successes into 30 (round up) to determine the num of seconds she is disoriented, then divide that product by 3 (ro up) to determine the number of Combat Turns the effects last.

ACTIONS

The following list describes possible actions a rigger can p form using a remote control deck.

FREE ACTIONS

Activate/Deactivate Sensors: A rigger may activate or d tivate sensors for a single drone. Activated sensors come on at the start of the next Combat Turn.

Activate/Deactivate ECM/ECCM: A rigger may activate deactivate ECM or ECCM for a single drone. Activa ECM/ECCM comes online at the start of the next Combat Tur

Arm/Disarm a Weapon System: A rigger may order a si drone to arm or disarm one of its weapon systems. Note th drone may have only one weapon system armed at any one t However, switching weapon systems only requires one Free Ac

Delay Action: Per standard combat rules.

Call up a Status Report: A rigger may monitor the posi heading and speed, damage report, and/or current orders single drone.

Observe: A rigger may casually observe through one dr If the rigger is in captain's chair mode (p. 65), he may do through any drone on his subscriber list. If the rigger is "jump into a drone—meaning that he is seeing and hearing prim through that drone's systems—he may observe through that mary drone only. This action is the same as the standard Action Observe (p. 81, **SRII**).

If a rigger has jumped into a primary drone, obser through a secondary drone requires a Complex Action **Operative Modes,** p. 65).

Speak a Word: Per standard combat rules.

SIMPLE ACTIONS

Affiliate/Disaffiliate a Drone: A rigger may add or d drone from the deck's active management.

Observe in Detail: A rigger may observe in detail (see p **SRII**) through any single drone while in captain's chair m While jumped into a drone, a rigger can do this with the pri drone only.

Perform the Same Free Action on Multiple Drones: A rigger may perform one Free Action with two or more drones simultaneously while in captain's chair mode. However, he cannot perform two or more separate Free Actions.

Jump into a Primary Drone: A rigger takes direct control of one drone (see **Operative Modes**).

Return to Captain's Chair: A rigger stops maintaining direct control of one drone and returns to monitoring the overall status of all drones. (See **Operative Modes.**)

COMPLEX ACTIONS

Conduct Signal Interception: A rigger may attempt to wage electronic warfare against a remote control network. For more information, see **Signal Interception,** page 68.

Conduct MIJI: A rigger may attempt to engage in advanced electronic warfare using one of four possible methods: meaconing, intrusion, jamming or interference. For more information, see MIJI, page 69.

Fire a Weapon System: A rigger may fire an armed weapon on any single drone. (See **Sensor-Enhanced Gunnery,** p. 58.) If the rigger is directly controlling a primary drone, he cannot perform this action with a secondary drone. Riggers operating through a cybernetic link can use their Combat Pool only with the primary drone. See **Operative Modes**.

Issue a Command: A rigger may issue a command to a drone or a group of drones. See **Issuing Commands**, page 66.

Intercept a Remote Control Channel: The rigger may search the airwaves for a remote control channel being used by another network. See **Signal Interception**, page 68.

Observe through a Secondary Drone: When directly controlling one drone, a rigger may casually observe (as in the Free Action Observe) through a secondary drone. See **Operative Modes.**

Operate a Drone: While jumped into a drone, the rigger may operate it as if he was driving it. He can perform any of the five standard vehicle actions—accelerating/braking, positioning, ramming and hiding—with the drone, and can use his Control Pool and rigger bonuses. (See **Vehicle Combat,** p. 45.)

Reconnect a Lost Carrier: A rigger may attempt to re-establish a remote control channel lost through electronic warfare. See **Re-connecting Lost Carriers,** page 72.

Regenerate Channel Degradation: A rigger may attempt to use ECCM to purge one remote control channel of degradation caused by MIJI. See **Regenerating MIJI Degradation**, page 72.

DRONES

Drones are unmanned vehicles that can be controlled via rigger networks, such as remote-control networks or security systems. Nearly any kind of vehicle—matchbox-sized cars, dwarf-sized rotor crafts, ground patrol vehicles the size of a large dog, even modified sports cars—may serve as drones.

The key difference that sets drones apart from ordinary vehicles is a unique vehicle rating called the Pilot Rating. All drones have a Pilot Rating, which represents the drone's self-piloting system and enables the drone to act independently of its controller to a limited degree.

A drone must be adapted for rigger control (however, it need not be fitted with a datajack system unless the rigger intends to physically jack into the vehicle). All drones that are incapable of carrying passengers are automatically pre-adapted for rigger control. Passenger vehicles or larger passenger drones are not usually pre-adapted, but most can be adapted quickly by the manufacturer, a mechanic or even the rigger herself (see **Vehicle Design and Customization,** p. 118).

OPERATIVE MODES

All affiliated drones operate under *primary* or *secondary* mode.

A rigger may operate only one drone in her network on primary mode. This enables the rigger to control the drone as if she was directly jacked into it. The rigger may use Combat and Control Pool dice when making tests for the drone and receives all rigger bonuses for those tests.

Success Tests for secondary drones are made with the drones' Pilot Ratings rather than the rigger's Skill or Attribute Ratings. Only IVIS Pool dice may be used for secondary drone tests. (For more information about the IVIS Pool, see **The BattleTac IVIS System**, p. 67.)

If a rigger is jumped into a primary drone, the rigger can only *casually* observe through the sensors of her secondary drones, and she must spend a Complex Action to do so. Additionally, Comprehension Tests made by the secondary drones to comprehend commands suffer a +2 modifier if the rigger issues those commands while she is running her primary drone. (See **Issuing Commands**, p. 66.)

Captain's Chair Mode

Instead of jumping into one drone, a rigger can supervise all the drones in her network via her remote control deck's master control. Riggers call this practice "sitting in the captain's chair."

When operating drones in the captain's chair mode, a rigger cannot use her Combat or Control Pool dice for drone tests. However, the rigger may still use her Task Pool dice and still receives Initiative bonuses.

The captain's chair mode is the only drone-control method available to characters who do not possess a VCR implant.

After barely escaping from an ambush while meeting with their Johnson, Rigger X and his team have hunkered down in a safehouse. Rigger X has deployed three of his drones—a Condor surveillance drone, a Doberman patrol vehicle and an armed spotter drone. Rigger X is operating his network in the captain's chair mode, monitoring all three drones simultaneously.

The Condor detects a Mitsuhama security transport closing on their location and beeps an alert to Rigger X. Although he is in captain's chair mode, Rigger X receives his usual Initiative bonus, which allows him to add 2D6 to his Initiative roll (and act first).

However, if Rigger X orders his drones to attack the transport, neither drone can receive bonus dice from any of Rigger X's dice pools. Further, both drones would use

their Pilot Ratings instead of Rigger X's Skill or Attribute Ratings for their Success Tests.

The spotter drone is closest to the MCT transport, so Rigger X jumps into that drone's rigger module and makes the spotter his primary drone. Rigger X is now directly controlling the drone, so he can draw dice from his Control and Combat Pools to augment Success Tests made with that drone. However, if Rigger X wanted to see what another drone was seeing, he would have to spend a Complex Action to do so. Also, if Rigger X wanted to order the Doberman to attack the transport as well, the Doberman would receive a +2 target modifier on its Comprehension Test.

ISSUING COMMANDS

When riggers are jacked into remote control decks, they may issue commands to drones at the same time that they declare their own actions (Step 2B of the Combat Turn Sequence, p. 78, S... Issuing a command to a drone requires one Complex Action.

A rigger can issue only one command to a single dr... regardless of how many drones his remote control deck is m... aging at that time. For example, a rigger may be controlling ... drones, but he may directly command only one of them w... Complex Action. However, if more than one drone is receiving ... identical command—"leave this area," or "attack this target," ... example—the rigger may command them as a group. The m... mum number of drones that a rigger can command is dictated ... the remote control deck (see **Subscriber Lists**, p. 62).

If a rigger has jumped into a primary drone, he controls t... drone as if he was driving it personally. He does not have ... spend a Complex Action commanding that drone to act, bu... *does* have to spend a Complex Action to issue a command ... another drone.

A rigger can issue a drone one-sentence commands such as "circle this area," "shoot anyone who comes through this door," "follow that car," and the like. The more specific and detailed the command, the greater the chance the drone's pilot will become confused, however. The gamemaster should rate the command's complexity (using the Skill Success Table on p. 68, **SRII**), set the target number for the test and give the rigger the option to downgrade the complexity before issuing the command.

The player then makes a Comprehension Test for the drone, rolling a number of dice equal to the drone's Pilot Rating against the target number. If the test generates at least one success, the drone comprehends the command and executes it. However, the more successes the test generates, the more leeway the drone has in "interpreting" the command (to the rigger's benefit). The gamemaster may even permit the rigger to decide what the drone does in response to a circumstance that runs counter to the rigger's instructions.

Additionally, riggers may use the Non-Matrix Programming Specialization of the Computer Skill to help their drones understand commands, because the specialization teaches riggers how to phrase complex commands in an orderly, logical fashion. Riggers may add a number of dice equal to their level in this specialization to the drone's Comprehension Test. However, the number of dice may not exceed the drone's Pilot Rating. No other dice pools may be used for this test.

When making Success Tests, drones not directly controlled by the rigger use their Pilot Ratings in place of the rigger's Skill or Attribute Ratings. Drones do not gain the benefit of dice pools, with the sole exception of the IVIS Pool (see **IVIS Pool,** below).

All drones in a remote control network act during the same Combat Phase as the rigger acts, whether or not a rigger is directly controlling them. The rigger acts first, then all drones follow.

THE BATTLETAC IVIS SYSTEM

The BattleTac IVIS (Inter-Vehicle Information System) is an extension of the BattleTac system. The basic BattleTac system enhances small-unit tactics among a group of soldiers; BattleTac IVIS (or simply "IVIS") does much the same for drones, and is used in conjunction with the Vehicle Tactics Specialization of the Tactics Concentration.

IVIS enables a rigger to give a complex mission to a group of drones. All the drones in the group must possess IVIS software as part of their Pilot programs.

IVIS Test

To use IVIS, the rigger makes an IVIS Test before making the Comprehension Test for the group of drones. The player rolls a number of dice equal to her Vehicle Tactics Specialization against a Target Number 5. Skill Web modifiers (p. 48, **SRComp**) apply if the rigger must default to the Tactics Concentration or Military Theory Skill.

A rigger may use the successes generated by the IVIS Test to add dice to the drone group's Comprehension Test, to create a temporary dice pool called the IVIS Pool, or both. For example, if a rigger's IVIS Test generates 5 successes, she may add 5 dice to the Comprehension Test or create a 5 dice IVIS Pool. She could also split the result in various combinations—for example, adding 2 dice to the Comprehension Test and creating a 3D6 IVIS Pool.

IVIS Pool

IVIS Pool dice are available to any drone within an IVIS group and may be used on any action performed by those drones. IVIS Pool dice refresh at the end of each Combat Turn until the drone group completes the assigned task or receives a new task. At either point, the IVIS Pool ceases to exist and the rigger must make a new IVIS Test to form another IVIS Pool for another task. IVIS Pool dice are not available to drones that a rigger has jumped into.

ROBOTS

A robot is an advanced form of drone. Like standard drones, robots possess a Pilot Rating, which represents the computer that gives the robot its limited autonomy. Unlike drones, however, robots contain advanced computer technology based on the semi-autonomous knowbot—computer technology that allows a robot to change its algorithm to adjust to new situations. In effect, robots can "learn" and adapt their behavior to better fulfill their mission requirements. To reflect this capability in game play, robots have Dice Pools and Threat Ratings, which standard drones do not possess. Robots may use Learning Pool dice and generate their own Initiative.

Though they can act with limited autonomy, robots are *not* true artificial intelligences. They have no self-awareness and cannot actually think for themselves. Robots cannot interface with the Matrix, nor can anything from the Matrix affect them.

LEARNING POOL

A robot's Learning Pool is equal to its Pilot Rating. A robot can draw dice from its Learning Pool to augment any Success Test that a standard character would augment with Combat, Control or Task Pool dice. As with those pools, the Learning Pool refreshes at the start of each Combat Turn and at each phase in which a robot can act.

Additionally, a robot equipped with BattleTac IVIS may also draw dice from an IVIS Pool. Learning Pool dice are *not* available, however, if a rigger is directly controlling the robot.

INITIATIVE

Because robots can learn and adapt, they need not act simultaneously with the rigger like standard drones. To reflect this capability, robots have their own Reaction Ratings and generate their own Initiative.

A robot's Reaction is equal to twice its Pilot Rating. The number of dice used is equal to the Learning Pool plus one, to a maximum of 4. Note that these dice are not Learning Pool dice and are not drawn from the Learning Pool. Additionally, no Learning Pool dice can be used for Initiative Tests.

ELECTRONIC WARFARE

The open airwaves are the only means by which to remotely command and control the drones within a network, which makes networks vulnerable to electronic warfare. Electronic intruders can "jam" a network's signals and deny a rigger control over her drones, override transmissions to and from drones, and mislead the rigger with false information.

Because of the special nature of the MSST (mobile subscriber simsense technology) system for remote control networks (the protocol remote-control decks use to communicate with their drones), the rules for electronic warfare against remote control networks differ from the rules for electronic warfare against standard radios (p.184, **SRII**) and the Electronic Countermeasures rules for Sensor Systems (see **Electronic Countermeasures**, p. 31).

Electronic warfare attempts may succeed to a variety of degrees. Unlike ECM, which totally disrupts a radio signal, electronic warfare attempts may simply degrade the quality of the net and make command and control more difficult, or they may allow an intruder to take control of an opponent's drones. Complete signal disruption almost never occurs.

Electronic warfare is a two-step process. First, the intruder must intercept the signals of the targeted network. Then the intruder may perform one of four more aggressive operations against the network—*meaconing, intrusion, jamming* or *interference*—collectively known as MIJI.

SIGNAL INTERCEPTION

Signal interception is both a means to an end and an end in itself. The first step in conducting electronic warfare, it is a passive assault that allows the intruding rigger to know what his intended target is doing before going on to more aggressive measures. Think of it as listening in on a telephone conversation—you may have no idea of who called whom or who is doing the talking, but you can get all the information exchanged by the two parties on the line. In a similar manner, signal interception allows an intruding rigger to eavesdrop on one of his opponent's signal bands and pick up all the information being transmitted via that band.

Before an intruder can attempt electronic warfare operations against a network, he must first intercept the radio frequencies on which his target is operating, which means locating the airwave frequency of the target network's command, simsense or system channels. The com-

channel relays messages that direct the movements and ...s of the drones, as well as situational information and intel... between the remote deck and the drones. The simsense ...nel routes audio, visual and simsense data between drones, ...C deck and rigger. The system channel carries data that ensures ...twork integrity and monitors drone status, and also routes data ...r indirect-fire attacks made with the network.

To intercept any of these channels, the intruder must be with... range to transmit his own signals to the opposing remote con... deck. Both the targeted deck and the intruder's jamming ...vice must be within the range of the least powerful device. (The ...ge of an electronic device depends on its Flux Rating; see **Flux ...ting and Range**, p. 30.)

If that condition is met, the intruder may attempt the inter... by rolling a number of dice equal to the rating of his ...vice (see **MIJI**) against a target number equal to the target's ...Deck Rating plus 3. Player-character intruders may add Task Pool ...ce to this test.

For each success generated on the test, the intruder inter... one of the network's channels. If the character is not ...empting to intercept a specific channel, the gamemaster may ...lect which channel is intercepted.

...EATING DECK ENCRYPTION

Some paranoid riggers (aren't they all?) encrypt their decks. ...feating encryption on an RC deck works differently than deal... with an Encrypted System (see **The Security Rigger,** p. 80). If ...e targeted deck is fitted with encryption devices, the intruder ...st defeat the encryption before he can intercept signals. The ...truder must make an Electronic Warfare Concentration Test ...gainst a target number equal to the targeted deck's Encryption ...ting plus 4. The intruder may use Task Pool dice for this test. The ...st must generate a number of successes greater than half the ...rgeted deck's rating, rounded up; otherwise, the attempt fails.

If the attempt to defeat encryption fails, the targeted rigger ...lizes that someone is trying to intercept his transmissions and ...aces his network on alert. Apply a +2 target modifier to all sub... intercept Interception Tests made against the network, including ...y MIJI attacks. This modifier is cumulative with each unsuccess... attempt to defeat encryption. If the test was successful, then ...e targeted rigger does not know someone is listening in on his ...k's signals.

A rigger may outfit his deck with a decryption device (see ...r Toys**, p. 98). In such a case, he adds that device's Rating in ...e to his Electronic Warfare Concentration Test.

M.C. Jammer (Electronic Warfare 7) is trying to intercept the system channel of a remote control network controlled by an Aztechnology rigger with a Rating 6 remote control deck.

To identify the frequency of the channel, Jammer rolls 5 dice (Jammer has a Rating 5 deck) against a Target Number 9 (the Azzie has a Rating 6 deck, plus 3). Jammer's test generates 1 success, so he locates the Azzie's system channel.

But before he can intercept the signal on the channel, he has to defeat the deck's encryption. The target number for the Electronic Warfare Concentration Test is 8 (the Azzie deck's Encryption Rating 4, plus 4 equals 8). Jammer has to achieve at least 3 successes, because the deck's Rating is 6 and half of 6 is 3. Jammer's player decides to add all 4 of his Task Pool dice to the test. That gives him 11 dice for the test (7 dice for his rating in Electronic Warfare, plus 4 Task Pool dice).

Jammer's test generates 3 successes, so he breaks the Aztechnology encryption. Had his test generated only 1 or 2 successes, however, the Azzie rigger would have been tipped off to the attempt, and the network would have gone on alert. Consequently, the target number for Jammer's next attempt would have increased by 2, to 10.

If the interception attempt succeeds, the intruder locates the appropriate channel and can read any data being carried over that channel by spending a Complex Action.

If the intruder intercepts the simsense channel, the intruder can see, hear and sense anything that the targeted network's drones are monitoring with their sensors. If the intruder intercepts the system channel, he can instantly get information on the position, direction of travel, ammunition and damage status of any single drone in the network. Intercepting the command channel allows the rigger to overhear commands being issued from the opposing rigger to the drones in that rigger's network.

However, each time an intruder spends an action in this manner, he runs the risk of discovery. Any time the intruder takes such an action, the gamemaster makes a Success Test for the targeted network using a number of dice equal to the targeted deck's rating against a target number equal to the intruder's Electronic Warfare Concentration. If the test succeeds, the network detects the intruder, goes on alert and switches all of its frequencies and prefix codes. The intruder must make another Interception Test to intercept the network's transmissions, this time with a +2 target modifier.

MIJI

MIJI (pronounced "mee-jee") is an acronym that stands for meaconing, intrusion, jamming and interference. Intrusion, jamming and interference are self-explanatory. Meaconing allows a rigger to introduce false signals into another rigger's network. It affects drones in much the same way a confusion spell affects a person. In each case, the intruder disrupts the targeted deck's transmissions and sends false signals to the network's deck and drones.

To perform one of these electronic warfare operations, the intruder and the targeted rigger make a MIJI Test—an opposed Success Test. The intruder rolls a number of dice equal to his device's Flux Rating against a target number equal to the target deck's rating. The targeted rigger rolls a number of dice equal to his deck's Flux Rating. If the intruder is attempting meaconing, intrusion or interference, the targeted rigger makes his test against a target number equal to the intruder's Protocol Emulation

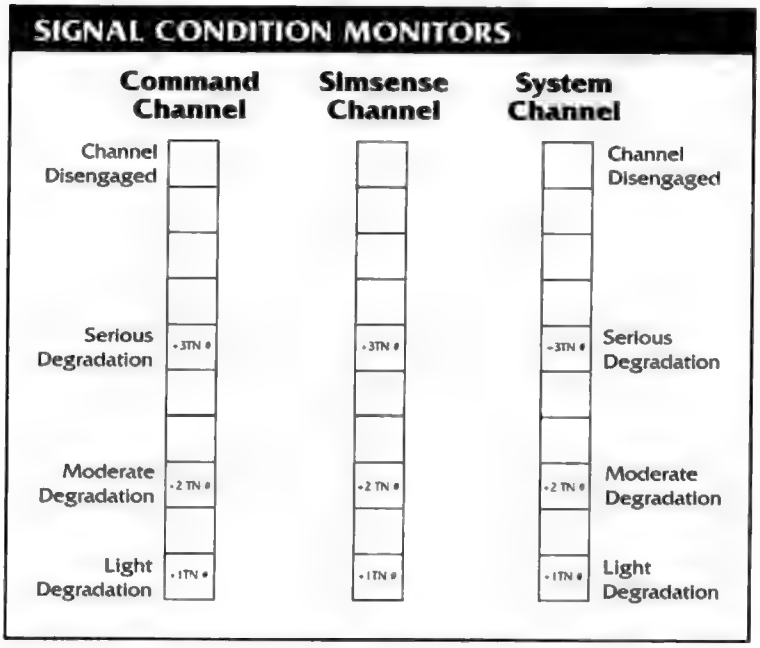
Module Rating. If the intruder is attempting to jam the targeted network, the rigger makes his test against the ECM Rating of the intruder's device. (For more information on the protocol emulation module, see **New Toys**, p. 98.)

Both the intruder and the targeted rigger may use Task Pool dice for these tests.

If the targeted rigger wins, the network's channels remain open and clear. If the intruder wins, he inflicts damage in the form of signal degradation on the network. This degradation is recorded on the network's Signal Monitor, in the same way character damage is recorded on a character's Condition Monitor. Each success on the opposed test produces one box of signal degradation on the targeted network's Signal Monitor.

The specific operation attempted—meaconing, intrusion, jamming or interference—determines which channel of the network experiences the degradation. As the degradation level of a channel increases, target number modifiers are applied to all tests for actions controlled by the degraded channel. When all the boxes of a channel's Signal Monitor are filled, the intruder effectively shuts out the remote control deck and can assume control of operations performed by that channel.

SIGNAL CONDITION MONITORS



MEACONING

In a meaconing attack, an intruder attempts to degrade the targeted deck's command or system channel integrity and introduce false system signals into the targeted network to degrade the Pilot Ratings of the network's drones.

To perform a meaconing attack, an intruder must have a remote control deck equipped with a protocol emulation module. The intruder and the targeted rigger then make a MIJI Test as described above.

Degradation modifiers generated by a successful meaconing attack apply to Driving Tests, Gunnery Tests and tests for other physical actions made with a drone's Pilot Rating, as well as IVIS Tests. They do not apply to Comprehension Tests made drones trying to understand commands from the targeted rig nor to drones directly controlled by a rigger.

Trixie is providing rigger cover for her shadowrunner team as they exit a corporate compound. When several security drones suddenly attack them, Trixie decides to use her remote control deck to make a meaconing attack against the security network and reduce the drones' capabilities.

The first thing she needs to do is make a Signal Interception Test. Trixie has a Rating 6 remote control deck (Flux Rating 8), while the corporate remote control network uses a Rating 3 remote control deck (Flux Rating 5). Trixie is in range, so she rolls 6 dice (her deck's rating) against a Target Number 6 (the corp network's rating of 3 + 3). She adds three Task Pool dice and generates 1 success. The gamemaster determines that Trixie intercepts the system channel, which is all she wanted to accomplish for her meaconing attack.

Trixie then rolls 8 dice (her deck's Flux Rating) against a Target Number 3 (the corp network's rating) for her half of the opposed MIJI Test. The gamemaster, making the test for the corp rigger, rolls 5 dice (the corp rigger's Flux Rating) against a Target Number 6 (Trixie's deck rating).

Trixie's test generated 5 successes, while the corp network generated only 1. That gives Trixie a Success Margin of 4, so the gamemaster marks off 4 boxes on the corp network's system channel, which results in Moderate degradation. The corp drones now receive a +2 modifier to any actions they take against the shadowrunners.

INTRUSION

In an intrusion attack, the would-be intruder attempts to false information into the targeted remote control network. information could be a false target for indirect fire on the sy channel, bogus intelligence on the command channel, or e forged simsense clip on the simsense channel.

To attempt an intrusion, the intruder must possess a re control deck and a protocol emulation module (for generatin false objects). Intrusion may be directed at a network's sy command or simsense channel.

If the intruder prevails in the MIJI Test, he creates the ap priate bogus object on the targeted network's appropriate c nel. The targeted rigger will believe the object is real unle rolls at least 2 successes on a Perception (3) Test. Apply appropriate degradation modifiers.

A successful Perception Test enables the targeted rigg recognize the object as bogus, but his drones will contin regard it as real until he dispels the illusion by blocking the sion with ECCM (see **Electronic Countermeasures**, p. 31).

If desired, an intruder may create a more convincing puter-generated bogus object before making his intr

attempt. The intruder must have a computer and spend 1D6 + 1 hours to do so. The intruder makes an Open Success Test with his Computer Skill (or Non-Matrix Programming Specialization). Use the test result as the target number for the targeted rigger's Perception Test.

Josie Cruise (Computer 3) is flying her team in on her helicopter Angelfire. The team is making its way to an isolated Cross Technologies laboratory in Tenino, just outside the Seattle metroplex limits. Josie is bringing her team in from the north, so she decides to make an intrusion against the lab security network's system channel and generate a false radar contact to the south to distract the lab's air-patrol drones. Josie makes a successful Signal Interception Test, so she manages to intercept the system channel.

Josie was expecting the drones, so before the run she spent some time on her computer generating images of enemy drones flying just above the treetops. She makes her Open Computer Test and generates a result of 8.

The opposed MIJI Test pits Josie and her onboard remote control deck (Rating 5, Flux 8) against the lab's remote-control security system (Rating 4, Flux 6). Josie rolls 8 dice against a Target Number 4, while the gamemaster rolls 6 dice against a Target Number 5. Josie generates 5 successes, while the lab network generates 3, so Josie wins the test by 2 net successes. Consequently, the lab's patrol drones fly off to the south, leaving no one to intercept Angelfire as it approaches from the north.

Additionally, the gamemaster marks off 2 system channel boxes on the lab network's Signal Monitor. That results in Light degradation. As a result, the lab's rigger must generate 2 successes on a Perception Test against a base Target Number 8 (the result of Josie's Computer Test) to recognize that the enemy drones are not real. A +1 target modifier for Light degradation applies to the test as well.

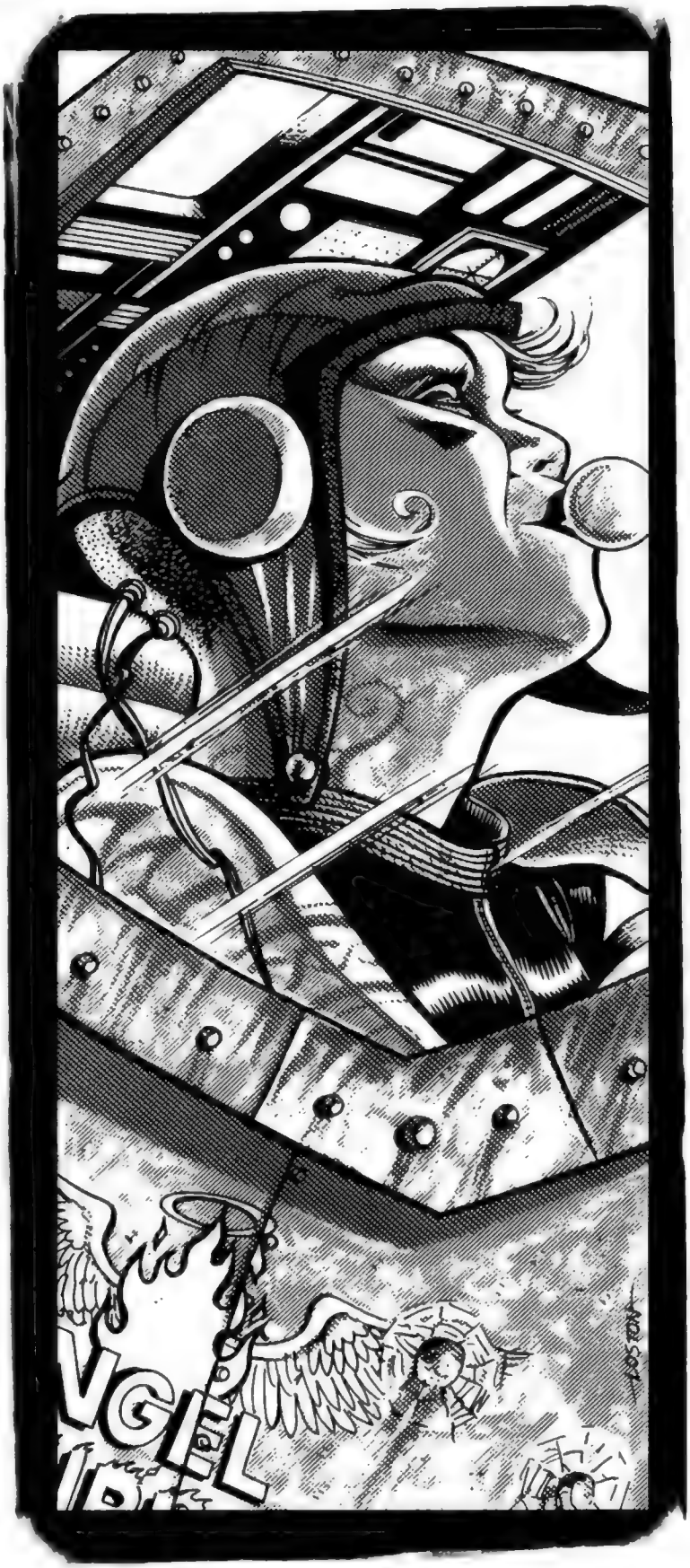
JAMMING

In a jamming attack, the intruder uses electronic countermeasures (ECM) to flood the targeted network's channels with electronic noise—crude, but effective. The intruder must possess ECM in addition to a remote control deck to make a jamming attack.

If the intruder succeeds in the MIJI Test, his ECM floods one of the targeted network's channels with electronic noise and degrades its signal quality. The intruder decides which channel is targeted; the effects of the jamming vary with each channel.

Command Channel

Command channel jamming causes degradation to command channel signals and adds degradation target modifiers to drone Comprehension Tests (see **Issuing Commands**, p. 66) and MS Tests. If all 10 boxes on the command channel Signal Monitor



are filled, the drones are cut off from the network. They either carry out the last command given to them or maintain a holding pattern where they are, taking action only in self-defense.

Simsense Channel

Simsense channel jamming causes degradation to simsense channel signals and adds degradation target modifiers to all Perception Tests and Manual Gunnery Tests made by the rigger through the drone.

If a rigger is remotely rigging a drone through the deck, degradation modifiers on the simsense channel affect the rigger's target numbers and penalize Initiative in the same way as standard damage modifiers. If a rigger is jumped into a drone or RPV when the carrier signal is lost (meaning that all 10 boxes are filled on the simsense channel Signal Monitor) for that drone, the rigger also suffers dump shock (see **Dump Shock,** p. 64).

System Channel

System channel jamming disrupts a network's Indirect fire coordination and affects the performance of its BattleTac Fire Direction Data Manager system (**New Toys,** p. 97). Degradation modifiers from the system channel Signal Monitor apply to Indirect Fire Gunnery Tests made with the network (see **Indirect Fire,** p. 60).

INTERFERENCE

In an interference attack, the intruder attempts to override the targeted network with his own signals. If the attempt succeeds, the intruder literally hijacks the network from the targeted rigger's control.

To make an interference attempt, the intruder must possess a remote control deck with a protocol emulation module. Interference affects the targeted network's system channel only; it has no effect on the command or simsense channels.

The interference MIJI Test works a bit differently than other MIJI Tests. Specifically, the intruder's own system channel suffers degradation if he loses the test.

In the Combat Phase following the first MIJI Test, either the intruder or the defending rigger may spend a Complex Action to make an interference attack or counterattack and trigger another MIJI Test. The players may make subsequent attacks and counterattacks until one of them manages to inflict 10 boxes worth of degradation on his opponent's system channel, or until a rigger exits the system. Whichever player achieves the required amount of damage first—or stays in the system after his opponent has exited—takes control of the opponent's entire network. The loser is shut out of the network and suffers dump shock (see **Dump Shock,** p. 64).

M.C. Jammer is using his remote control deck (Rating 5, Flux 7) to make an interference attack after a successful Signal Interception against an Aztechnology remote control network (Rating 6, Flux 4).

For the opposed MIJI Test, Jammer's player rolls 7 dice against a Target Number 6. The gamemaster rolls 4 dice against a Target Number 5. Jammer generates 1 success, while the gamemaster gets none. The gamemaster fills in 1 degradation box on the Azzie's system channel Signal Monitor.

During the next Combat Phase, the Aztechnology rigger spends a Complex Action to counter the interference attempt. Jammer generates no successes on the opposed MIJI Test this time, but the gamemaster scores 2 successes for the Azzie rigger. Jammer fills in 2 degradation boxes on his system channel Signal Monitor.

After two more interference tests, the Aztechnology rigger has 8 degradation boxes filled on his system channel Signal Monitor, while Jammer has 6 boxes filled on his own monitor. Jammer makes another interference attack, and both sides roll dice for the MIJI Test. Jammer's player rolls 4 successes, while the gamemaster gets none. That fills the remaining degradation boxes on the system channel of the Azzie rigger's Signal Monitor, so the Azzie rigger is dumped from his system. Jammer takes control of the network and immediately commands its drones to attack the Aztechnology guards.

REGENERATING MIJI DEGRADATION

Riggers may use ECCM to "heal" signal degradation caused by MIJI attacks and restore channel integrity.

To do so, the rigger must spend a Complex Action and make an ECCM Test against a target number equal to the intruder device rating (either the intruder's deck or ECM rating, whichever is higher) plus 3. Task Pool dice may be used on the test. For each 2 successes generated, reduce the degradation on the selected channel by 1 box on the channel's Signal Monitor. Riggers may regenerate only one channel at a time.

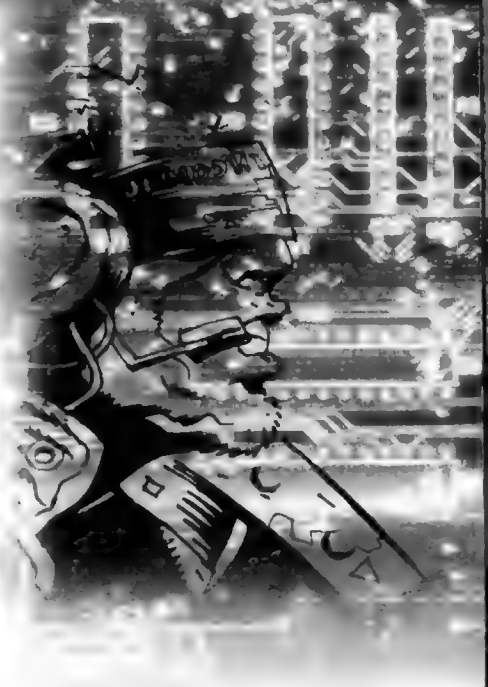
RE-CONNECTING LOST CARRIERS

When a remote control deck loses a channel because of degradation, it loses the channel's carrier signal. To access that channel again, the deck must re-connect the carrier signal to that channel.

Before attempting to re-connect a lost carrier signal, the rigger must first make an ECCM Test to regenerate any signal degradation and clear boxes filled on the Signal Monitor. At least 1 box must be clear before the rigger can attempt to re-connect the carrier signal.

Then the rigger makes a Control Systems Concentration Test. If any degradation still exists on the channel, apply appropriate degradation modifiers. Any damage modifiers for Physical Stun damage suffered by the rigger apply as well. If the number of successes exceeds the number of filled degradation boxes on the channel's Signal Monitor, the re-connection attempt succeeds.

THE DUELISTS



◗ Sysop: You are in the War Stories room.

◗ Sounds like one helluva run, Jo.
◗ Hellcab

◗ Buy me a beer and I'll tell you about an even better one.
◗ Josie Cruise

◗ (pop/fwsshhh/glugluglug) Bought and poured, Jo-girl. Spill.
◗ Hellcab

◗ I'll trust you for one in the meatworld (fool that I am ...). Okay. I was in Calfree last spring, part of a team pulling a job on Yamatetsu. The corp had a hush-hush R&D compound up in the Northern Crescent, not far from Blue Lake. Our Johnson thought they were up to something biogenetically questionable (to put it nicely), and wanted us to get two kinds of proof: data and a sample. Get in, snatch the goodies and get out again—my specialty.

So we headed out from Redding, got as near to the compound as we could by off-roader, then bailed and started hoofing. I'm not going to bore you with the rigger's-eye-view of the ride up; half the folks on this board know what that's like, and anyways nothing happened. The fun stuff all came later.

Our Johnson was amazingly well-informed about the place she'd sent us to hit, so we had a pretty fair idea of where its defensive perimeter was. Yamatetsu had built the place in a little hollow between two hills—half inside the northernmost hill, to be exact. So we hunkered down just shy of the top of the southmost hill, and I called up a couple of Condors to go have a look-see.

You gotta love a Condor LDSD-23. Especially when it answers to a cranial remote deck. I got to try out almost all my new toys on this run ... but I'm getting ahead of myself. Anyways,

for those few of you who don't know, the Condor's damned near the ultimate stealth drone. It soars up on its little balloon and sleazes right by a whole mess of sensors and radar, and not one of them sniffs a thing. My remote deck let me see the world through the drone's eyes, giving me as clear a picture of the compound's perimeter defenses as if I'd walked straight up to the fence and stuck my nose through it. Better, actually. The naked meat eye doesn't give you thermo or infrared unless you're the right metatype, and the metahuman nose can't chemsniff half as well as the chemical sensors my Condor was packing.

The Condor showed me about what I'd've expected from a hush-hush R&D compound—security was tight enough to safeguard the important drek inside, but nowhere near impossible. In a place like the Northern Crescent, if you're setting up secret shop and don't want to attract attention, you really can't afford to dress up the outside of your research playground with every single bell and whistle ever thunk up by Ares Macrotech and Knight-Errant and other purveyors of paranoiac pacifiers. You have to pick and choose, and layer your defenses. So I knew that getting the team through the perimeter was only going to be half the battle. Once I'd managed that, I'd have to take over the building's systems if I could—which meant going head-to-head with the security rigger we'd been told was there, probably. I was looking forward to it; things'd been kind of slow lately.

But first things first. The compound had a fence around the three sides that weren't under the hill, with tall skinny pillars spaced intermittently across it that I recognized as sensor posts. Motion and infrared, most likely. Through the fence I could also see Ferrets and Dobermans and even a couple of Guardians crawling along, patroling the perimeter a lot more tirelessly and efficiently than meat guards would've done. (Cheaper, too; a drone doesn't need pay or health benefits and never takes personal time.) There were also gun emplacements, on the two fence corners and lined up across the roofline of the building. Sentry guns; I could tell by the shape. Not the mobile kind on a track, though. Likely they'd reserved those and the Sentry IIs for inside.

So I had my work cut out for me. I had to take out the sensor posts, drones and Sentries all in one shot, so the rest of the team could get up to the fence and through it without getting cut down by a hail of lead. Also without being spotted. The sec-rigger would know something was going down the minute I started to muck with his system, especially considering the level of mucking that was clearly going to be necessary—but the longer we could keep the opposition from knowing exactly what they were up against, the more time we'd buy for ourselves. And our job wouldn't take us that long.

I called my eye-in-the-sky back and whistled up three more drones. These had special jobs to do. Two of them were remote-adapted Artemises loaded with Jabberwockies, primed and ready to fire. The third drone, which I sent in first, was my favorite new toy: a Hedgehog signal interceptor, the very latest in seeing-eye techno-beasts.

●

● Where in the name of the Great Ghost did you get a Hedgehog?! I thought the Azzies put a tight lock on distribution. They went to a lot of trouble to develop that puppy; they sur drek don't want street scum like us getting ahold of them. Wh you do, sell your soul to Old Scratch or something?
● Nissan Barb

● Fell off the back of a t-bird, my fixer said. When somebody offers me a new piece of wizbang tech, I don't ask too m questions. The important thing is, I got it, and I used it when I ne ed it. Now don't interrupt my story; I'm on a roll here, 'kay?

The Hedgehog's a terrific piece of equipment. No rigger can afford one should be without it, I don't care who you ha frag over or go to bed with. What this pup does, it tells you th nal strength, protocols and encryption that a system is usi other words, the Hedgehog gave me the key to the compou entire electronic security system just by reading the kinds of s flowing through those sensor posts. Giving me the shape and and taste of it, so to speak. (Not literally—but sometimes it's to put what a rigger gets from a drone into words that ord people can understand.) All this stuff was vital information t make the second half of my job—taking over the buildin tem—that much quicker and easier.

Its job done, the Hedgehog crawled back. I shut it dow told the Artemises to fire their payload in ten seconds, then them soaring toward the fence. And braced myself again hillside so I wouldn't fall over, because I knew I'd get it whe Jabberwockies hit. A Jabberwocky is a jammer missile, whic perses transponders instead of a warhead. The transpond nals frag up sensors, remote-control transmissions, you name a fifty-yard or wider radius around the point of impact. So ever disruption they caused, the Artemises they rode on wou nailed by it too. And since I was talking to the Artemises via re deck, I knew I'd feel the backlash until I broke the link. But meantime, all those sensors and perimeter drones and ev seeing-eyes on the Sentry guns'd be blind and deaf and Which meant no security rigger was going to spot my tea ting through the fence and inside.

●

● Jeez. Why not just walk up to the front gate and shout hel take out such a huge chunk of a rigged building's secu tems, the rigger's gonna know the place is under attack. N can you pass that off as a malfunction, or a hair-trigger tripped by a high wind.
● Silent Running

● You missed a paragraph somewhere, didn't you? M knew fragging well we were tipping corpsec off—but a they didn't know how big the threat was or exactly where coming from, all they could do was chase their tails. We fig be in and gone before they twigged enough to matter. were right.

I counted down in my head, then watched the wo black and go dizzy for a few seconds until I closed off the the Artemises. I felt the rest of the team run by me, over the down. While the mage tended to the magical barriers sams chopped through the wire, I crawled backward just

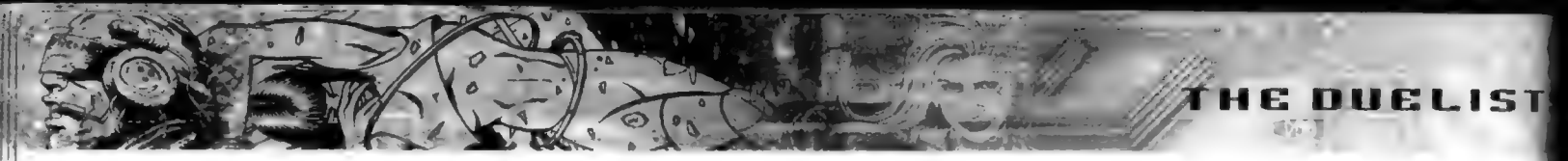
to be completely out of range of Jabberwocky spillover, then called up the rest of my drone network. Wandjinas with Vanquishers mounted on them, these were; fast and deadly, just the thing for taking out perimeter drones. And I had to do that, both to keep myself safe once I started monkeying with the sensor port's datalines and also to keep the drones from bothering my buds on their way back out. The Jabberwocky jamming'd only keep the drones blind and deaf for so long; once it started to wear off, all those Ferrets and Dobermans and Guardians with their little turret guns would pose quite the nasty problem. Unless my Wandjinas took care of them first.

It's a weird, weird feeling, seeing through the eyes of half a dozen drones at once. Kind of like what I imagine bug eyes must be like—all those facets showing you overlapping pictures. Except that in my case, the pictures were different instead of the same image from different angles. To run a network like that through a cranial remote deck—or any kind of wiring, for that matter—you've got to be good at multi-tasking. If you can't concentrate on a dozen things at one time before breakfast, then don't even try this stuff. You'll just make yourself sick trying to track everything, and somebody else'll have to risk her hoop bailing you out of trouble. I don't have a problem with it; but then, I was the kind of kid who liked looking at those crazy optical-illusion prints with the upside-down staircases and stuff. I sent my Wandjinas around the edges of the Jabberwockies' area of effect—couldn't send them through it, or they'd be as blind as the sec-drones they were hunting—and waited for a clear target.

Then came the first sign of trouble. A pair of Condors appeared, floating high and distant over the top of the compound. Nuyen to noodles they were outside Jabberwocky range. They weren't mine, so I knew they could only have come from one source. The sec-rigger'd figured out that Something Big was up, and had sent a couple of spies to find out what the frag was going on.

Well, I'd expected that. Not quite so soon, though; when I finally got to tangling mano a mano with this guy, he was going to be good. The enemy Condors weren't armed, so I ignored them and got on with the primary task: nailing the daylights out of the blinded perimeter drones, some of which were still spinning around in crazed circles. At first my Wandjinas made short work of them. After awhile, though, I saw some of the ones that'd stopped dead starting to move—sluggishly, but with purpose. They were getting out of the Wandjinas' line of fire, and a couple of Guardians were even starting to swing their turrets back and forth. Bad news for me—either the Jabberwocky effect was wearing off or the sec-rigger was using a little ECCM to overcome the Jabberwocky interference. Either way, it meant I didn't have much time. I had to take over the building system before the perimeter drones recovered, or I'd be their sitting duck.

I slung my duffel bag over my shoulder and ran up to the nearest sensor post. The access panel was easy to spot; I blew the lock on it with a short strip of acid solder, then pulled a decryption module out of the duffel. Tech-heads like me use this little hand-held meter doohickey to analyze and decrypt CCSS protocols. My Hedgehog had already told me the system was encrypted, which let me bypass the usual step of plugging in a protocol emulation



module and using it to figure out what was there. Took lots less time this way, which was vital on this particular run.

I found the junction box and carefully opened the cover plate, exposing the optic cables and electrical wires inside. Then I took out my microtronics kit and delicately spliced my own leads into the system. As I started to connect the free ends of the splice into the decrypt module, I felt a bullet punch me in the side and flatten itself against my armor. The sec-rigger had managed to get at least some of his toys working again. I had to take care of them before jacking into the building system, or they'd take care of me. Lucky thing I'd brought along a signal amplifier.

The output from the signal booster let me call the Wandjinas in closer, within the range of the fading Jabberwocky interference. Thank the Ghost in the Machine for those boosters, and for the Battletac IVIS system some bright tech so recently came up with. Makes a combat-drone network *sooo* much easier to deal with ... and leaves part of a rigger's mind free to take on another job, like connecting illicit wiretaps and turning on a decrypt module. The 'jinas took out a Ferret and a Guardian that were far too close for comfort. *Now*, I thought, and jacked in.

Overriding a security rig is a tough job. Unlike decking, you can't rely on a clever bag of tricks to outwit any IC or other deckers you happen across. Instead, it's a pure battle of wills between you and the sec-rigger. The toughest mind wins; the loser usually ends up brain-fried or dead.

◘

◗ Just for the record, decking into a system is NOT easy. And I resent any implication to the contrary.

◗ E-slipper

◗ Didn't mean to rile you, E. I didn't say decking was easy. But it is different than the way a rigger taps into a system. I just wanted to get that point across.

And now back to our feature presentation ...

A flood of images and voices surrounded me, as if I'd invaded someone else's brain (which, in a way, I had). I built a mental wall around myself as fast as I could, then formed a fist of pure willpower and struck out hard at the source of the flood. I felt an echo of dizzy pain as the blow connected—then a wallop, much more immediate and powerful enough to send my virtual self sprawling on my hoop. The sec-rigger was fighting back—and as I'd guessed, he was no slouch in the battle-of-wills department. I could feel the shape and weight of his virtual body, saw the two of us locked together in a wrestling hold. One or the other would have to give, and I was determined it wouldn't be me.

Distantly, as if my meat body belonged to someone else, I felt the impact of more bullets against my heavy armor. I ordered my Wandjinas to redouble their assault. A few seconds later I felt the sec-rigger reel away from me, and I knew that one of my drones had blown up one of his. Impressive that he'd managed to hang in; half the time, a direct hit on a drone you're controlling will dump you right out of the system. It isn't only deckers who have to worry about dump shock.

The next minute, that worry hit me over the head with all subtlety of a tire iron. A Guardian got off a lucky shot that took one of my Wandjinas, and the resulting nasty feedback dam near made me black out from pain. But I couldn't afford to b out. I had to win this fight or die trying.

My control of the rest of my drone network was hanging thread. Sick and dizzy, trying to ignore the red-and-black fl that kept cutting across my vision, I pulled a sneaky tactic had the added virtue of not demanding mental effort. I push button on my decrypt module and sent a complicated enc protocol down the dataline. As I expected, the sec-drones had been moving toward me slowed down, then stopped. N of them fired. My little encryption trick had slowed the sec-rig response time dramatically while he tried to sort out just wha frag I'd done. Now I had time to shake off the not-quite-d shock and sneak up on the fragger.

I focused inward, then made an even bigger mental fist slammed it down on the ghostly outlines of the sec-rigger's v body. As his mind wavered under the impact, I wrapped my al arms around his middle and squeezed. Hard. His virtual s began to collapse, curling into a fetal position and then m into a shapeless mass.

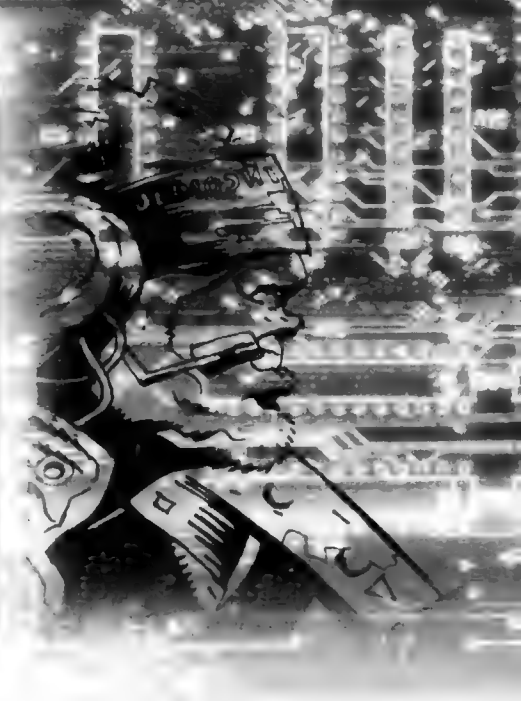
Then his collapse speeded up. He was trying to wriggle my grip before I throttled him into a coma. A dark hole of n suddenly opened nearby, and the sec-rigger flowed towa Little fragger was trying to jack out. I stretched out a virtual leg blocked the entrance to the hole, then wrapped around the rigger again and squeezed some more until I couldn't sens presence anywhere in the system.

I'd won. I was the building now; I could feel every squar of it, plus all the perimeter drones that had been doing their best to knock out my Wandjinas. First thing I did was order the drones to back off. I kept them active, though, in case I need them to help my buds on the way out. (That old martia rule is dead on target; use your enemy's strength against h much as you can. Saves you the trouble of doing all the work self, and surprises the hell out of the bad guys.) The next thing was find my team, just in time to open some convenient doo them without tripping any alarms. I also kept track o Yamatetsu security guards, alerted to trouble by the security before I'd dealt with him. Thanks to my Jabberwockies, they no idea who was attacking their facility or where the team they jogged up and down corridors at random, not kno where to go. For the sheer fun of it, I set off a gaggle of m sensors several hundred yards away from where my team wa razorboys dashed off, each of them eager to be the first o nail himself a real live intruder.

Needless to say, we pulled off the run and were well pensated for it. Which just goes to show what a talented can do—especially if she spends her cred wisely.

◗ Josie Cruise

THE SECURITY RIGGER



Security riggers use closed-circuit simsense systems (CCSS) to control the security systems of entire buildings or facilities via remote technology. The closed-circuit system gives the rigger control of all drones patrolling that site and enables him to automatically sense any event that the site's security sensors detect.

ACTIVE SECURITY RIGGERS

When a security rigger jacks into a CCSS and becomes "active," he is said to "assume the body." This mode enables the rigger to visualize a three-dimensional map of the security system under his control, experience the system's sensor input and status as physical sensations, and control the system through neurological impulses.

The rigger experiences local radio traffic picked up by the system's sensors as auditory sensations. All CCSS systems use scanning receivers to monitor various friendly frequencies and intercept potentially hostile radio transmissions. (CCSSs are commonly equipped with decryption systems that have ratings equal to the system's Security Level.)

Normally, the system's security devices—drones, weapon ports, security doors, gas vents, cameras and such—operate on "autopilot" when they are not under the rigger's active control. If a device detects an anomaly or an automatic alarm goes off, the security system's main computer contacts the security rigger, using sensory stimuli to gain his attention.

If a security system also has mobile drones under its control, the rigger may command them as if he was in the "captain's chair" mode and controlling drones via a standard remote control network. The maximum number of drones a rigger can command is equal to the rating of the rigger's remote control deck.,

Individual sensor triggers, such as a CCSS-rigged door being opened and closed or unidentified personnel moving through the corridor, register as tactile sensations on the rigger's skin. The trigger's degree of importance determines the intensity of the sensation. Regular triggers, such as the opening of a door to a sensitive area, register as mere twitches on the skin, while a red alert with full klaxons may come across like a burn from a hot iron. To determine whether a rigger recognizes important sensations, the gamemaster makes a secret

Perception Test for the rigger whenever a significant trigger occurs. If the test succeeds, the rigger notices the trigger. Target numbers for the Perception Test appear in the Rigger Perception Tests Table. If the alarm or sensors have been triggered, the security rigger automatically knows someone is there; no Perception Test is required.

RIGGER PERCEPTION TESTS TABLE

Trigger Condition	Perception Test Target Number
Security door or gate opening/closing	5
Attempted lock tampering, no alarm	3
Successful lock tampering	3 x number of tamper successes
Device destroyed	4
Device carefully deactivated	6
System on alert	–2

When security riggers "jump" into particular components or component groups of a CCSS, their audio/visual perceptions shift into real-time perceptions of the vicinity immediately surrounding the component, to a maximum of any single room less than 100 square meters and any corridor less than 25 meters long. However, they retain awareness of the overall security system through their tactile senses. Security riggers can jump into a drone or into the groups of active security measures and countermeasures in a particular site location, such as a room or a corridor. In the latter case, the rigger would take command of doors, climate control, gun ports and the like within that area.

Note that riggers can perceive events only in the area covered by their CCSS. For example, a corporation might use several closed-circuit systems to cover different parts of a facility. If a rigged system covers only part of a facility, the rigger knows which sections the rigged system does not cover and will not know what is going on there.

ACTIONS IN A CCSS

Riggers may perform the following actions in a closed-circuit simsense system.

FREE ACTIONS

Activate/Deactivate Sensors: The rigger may activate or deactivate sensors for one drone. Activated sensors will be online at the start of the next Combat Turn.

Arm/Disarm a Weapon System: The rigger may arm or disarm one weapon system mounted on a drone or fixed weapon port.

Delay Action: Per standard combat rules.

Call up an Overall Status Report: The rigger may monitor the overall status of the security system.

Observe: The rigger may observe through any single drone, a single room's sensors, or the sensors in a section of corridor. This is the same as the standard Free Action Observe (p. 81, **SRII**).

Speak a Word: A rigger may broadcast a message via i com to a room, a group of rooms, a section of corridor o entire facility. This action follows standard combat rules (p. **SRII**).

Suppress Automatic Alarms: The rigger may suppres automatic alarm within the limits described in the previous col

SIMPLE ACTIONS

Observe in Detail: The rigger may observe in detail (p. **SRII**) through any single drone, room or section of corridor.

Jump into a Primary Drone: The rigger takes direct contr a single drone. (See **Operative Modes,** p. 65.)

Monitor Radio Traffic: The rigger may monitor radio munications on a single radio frequency.

COMPLEX ACTIONS

Control a Room: The rigger may take direct control of weapon systems, security doors or other mechanical security tems in a single room or a section of corridor. Rigger bonuses all dice pools apply in this mode. (See **Rigger Bonuses CCSS.**)

Fire a Weapon System: The rigger may fire an a weapon mounted on a drone or a weapon port. Riggers can their Combat Pool only with drones or rooms they are contro directly. (See **Rigger Bonuses in a CCSS.**)

Issue a Command: The rigger may issue a command drone or a group of drones. The maximum number of dron rigger can command is equal to the rating of the rigger's re control deck. (See **Issuing Commands,** p. 66.)

Operate a Drone: While jumped into a drone, the rigger operate it as if she was driving it and use her Control Pool and ger bonuses. (See **Drones,** p. 65.)

Turn On/Turn Off a Device: While directly controllin room or corridor section, the rigger may turn on or off unspecified devices such as gas vents, sprinkler systems lights. The rigger can also adjust the setting of variable-se devices such as thermostats and fans.

RIGGER BONUSES IN A CCSS

Security riggers automatically gain the initiative bonuses ferred by the vehicle control rig, as well as other cyber described in **The Rigger** (pp. 16–18). Additionally, riggers use their Task Pools to defeat encryption and adjust to system tocols. However, when battling a security rigger, an intruding ger can use no dice pools except for his Karma Pool. Likew NPC riggers fighting to retain control of a CCSS system ca draw on Threat/Professional Rating dice to augment their suc tests.

When riggers "assume the body," they do not have acces any of their dice pools except the Karma Pool. Riggers gain access to their dice pools when they jump into a drone, roo corridor, however.

THE SECURITY VALUE

Rigged security systems have varying levels of technolog capability (or difficulty, depending on how you look at it), as

varying levels of vigilance. (Anything from ultra-paranoia to "Shadowrunners? What are shadowrunners?") These two characteristics are measured by a system's Technical Rating and Vigilance Code. The rating and code collectively form the system's Security Value.

The Technical Rating is a numerical value, from 1 to 10, which indicates the technological sophistication of the system. A Technical Rating 1 represents an antiquated, near-obsolete system that hasn't changed much since CCSS first came out. A Technical Rating 10 represents a modern, cutting-edge system fielded with state-of-the-art components.

The Vigilance Code indicates the overall watchfulness and effectiveness of the security system. A facility can have the latest and greatest security equipment, but it really doesn't mean much if the company doesn't back it up with a thought-out security plan, proficiently trained security riggers, adequate technician staffing and a proactive maintenance schedule. These and other intangible factors determine the system's Vigilance Code.

The Vigilance Code is expressed as a color—Blue, Green, Amber or Red. Each color corresponds to the number of successes a rigger must achieve during each step when accessing the security system. Note that the Vigilance Code does *not* apply during rigger combat or after a rigger has taken control of a rigged security system.

ACCESSING A SECURITY SYSTEM

Unless a rigger can battle her way through legions of guards to access the security room where the security rigger operates (possible, but not very likely), she will have to wrest control of the security system from her opponent by accessing the network.

Unlike remote control networks, which relay information via radio transmissions, CCSS security networks communicate via hardwired fiber-optic communication lines and underground or embedded power cables. Therefore, CCSS networks are not vulnerable to MIJI attacks. To wrest control of a CCSS network away from a security rigger, an intruding rigger must tap into the hardwired network and defeat the controlling rigger in rigger combat.

This process is divided into five steps, each a Complex Action:

1. Find a hardwire access point
2. Tap into a dataline
3. Defeat encryption
4. Adjust to system protocols
5. Defeat controlling rigger in rigger combat

To perform these steps, the intruder needs the following gear:

A remote control deck
A rigger protocol emulation module
A dataline tap (if necessary)
A rigger decryption module

STEP 1: FIND A HARDWIRE ACCESS POINT

The rigger must find some point in the system to which he can hardwire a dataline tap (p. 243, **SRII**) or an RC deck. Most rigged systems are not accessible from outside, so the rigger

VIGILANCE CODE CRITERIA TABLE

Level	Number of Successes	Description
Blue	1	Low vigilance. A corporate rigger from the motor pool doubles as a security rigger on an on-call basis only. Drones and defensive systems use nonlethal weapons and ammunition.
Green	2	Moderate vigilance. The company employs a dedicated security rigger, but he works on an on-call basis. Use of deadly force by drones and automated defense systems is authorized only during a state of alert called by a (meta)human guard.
Amber	3	High vigilance. Full-time security riggers are jacked into the network 24 hours per day. The system is authorized to use deadly force, even if there is no active alert. All network communications are encrypted.
Red	4	Maximum vigilance. Security system and personnel are on constant, active alert. All network communications are encrypted.

will likely have to enter a protected area of the site to find such a point.

Any fixed device connected to the CCSS network (such as a camera, security door or gun port) can provide a valid hardwire access point. However, a dataline tap is required to access such points. Very rarely, CCSS systems have open slave ports scattered throughout the site to enable roving security riggers to connect RC decks to the network. Of course, intruders can also connect RC decks to such points without the need for dataline taps. However, open slave ports are heavily disguised and not usually placed in easily accessible areas.

STEP 2: TAP INTO A DATALINE

To tap into a dataline, an intruder rolls a number of dice equal to the dataline tap's rating plus his Electronics Skill. Task Pool dice may be used for this test. The test is made against a target number equal to the system's Technical Rating. The intruder manages to tap into the line if his test successes equal or exceed the successes listed for the system's Vigilance Code in the Vigilance Code Criteria Table, p. 79.

STEP 3: DEFEAT ENCRYPTION

Many high-security systems encrypt their remote signals and/or hardwires. If an outside rigger runs into encryption, he can use a decryption module (see **New Toys**, p. 98) and make a Decryption Test to decrypt the system's communications. The test uses a number of dice equal to the decryption module's rating plus the rigger's Intelligence. Any remaining Task Pool dice may be used for this test. The test target number is the system's Technical Rating. The intruder manages to decrypt the system's communications if his test successes equal or exceed the successes listed for the system's Vigilance Code in the Vigilance Code Criteria Table. If he fails, the security system goes on alert.

STEP 4: ADJUST TO SYSTEM PROTOCOLS

Not all rigged systems use the same protocols. Therefore, a rigger intent on crashing a rigged security system must find out beforehand what protocols the targeted security system uses. Once the team rigger has this knowledge, she can use the protocol emulation module installed on her RC deck.

To do so, the rigger must make a test using a number of dice equal to the protocol emulation module's rating plus her Intelligence. Any remaining Task Pool dice may be used for this test. The target number is the system's Technical Rating. The intruder adjusts to the protocols if her test successes equal or exceed the successes listed for the system's Vigilance Code in the Vigilance Code Criteria Table. If she fails, the security system goes on alert.

STEP 5: RIGGER COMBAT

Once the outside rigger has completed the preceding steps, he must fight the security rigger for control of the system. Because rigged systems operate through hardware rather than software, no hardening, defensive programs or intrusion countermeasures exist. The two riggers use hardware to attack each other and inflict real damage on one another. Rigger combat is conducted according to the following sequence:

Initiative

Each rigger rolls his rigged Initiative per the standard rul The rigger with the highest result acts first. This roll can occur part of the normal Combat Turn sequence. As in standard comb a rigger acts during every tenth phase of the Combat Turn.

Attack/Disengage

The rigger who won the Initiative may choose to attack disengage. Attacking requires a Complex Action.

If the rigger attacks, the opponent makes an oppos Willpower Test. The rigger who initiated the action may use Control Pool dice. However, the number of dice used may exceed the attacker's Willpower.

The rigger who generates greater net successes on the does (Willpower)L Stun damage to his or her opponent. Incre the Damage Level by 1 for every 2 successes generated. The ing rigger makes a Body Test to resist the damage, augmented his or her Control Pool if the rigger desires. However, the num of dice used may not exceed the rigger's Body Rating.

If either rigger decides to disengage, he or she jacks ou the system and surrenders control to the other rigg Disengaging is a Free Action; re-entering the system require Complex Action.

Ending Combat

Combat proceeds until one of the two riggers disengages passes out. If the intruder manages to overcome the security ri ger, the intruder can manipulate the rigged system and/or dro at will.

Additionally, the intruder gains access to all of the infor tion that had been available to the defeated rigger. (See **Ac Security Riggers,** p. 77; **Actions in a CCSS,** p. 78; and **Rig Bonuses in a CCSS,** p. 78.)

DECKING A RIGGED SYSTEM

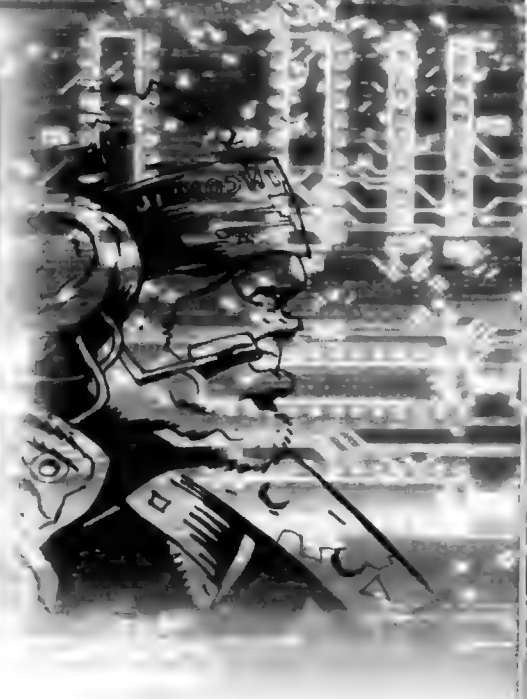
It is possible to deck into a rigged CCSS system, but a de er will never be able to control the system as efficiently as a ri ger does (riggers interface directly into rigged systems, wi deckers must modify the user interface and operating system programs).

To deck a rigged system, a decker needs a cyberdeck ou ted with a rigger protocol emulation module (**New Toys**, p. and the software to run it. The decker performs steps 1-3 accessing a rigged system per standard rules (see **Accessing Security System**, p. 79).

Combat between a decker and a rigger in a rigged system f lows the rigger combat rules, but the following restrictions ap to the decker:

- No Matrix programs may be used.
- The decker receives a +2 modifier on all tests.
- The decker's Initiative is at –2, and he gains no dice from deck's Response Increase.
- The decker has a Control Pool equal to one-half (round up) of his emulation utility's rating.
- The decker takes damage as if from non-lethal black IC, (S p. 49, **Virtual Realities 2.0.**)

ADVANCED VEHICLE RULES



The following advanced rules are for **Shadowrun** players who want to add more realism and additional levels of complexity (and math!) to running their rigger character. This section offers more options for game play that cover both the everyday and extraordinary situations characters may encounter when running the shadows. Because many of these options require substantial number-crunching and character upkeep, players and gamemasters should review these rules and choose only those that will enhance their game enough to balance out the extra work required.

This section includes rules for fuel grade and consumption, rules for maintenance and overhead during missions, quality factors (how well or poorly a vehicle is built), vehicle subsystem damage, additional gunnery rules covering a vehicle's electronic footprint, more detailed remote control rules, and additional options for electronic warfare.

VARIABLE FUEL CONSUMPTION

A vehicle's Economy Rating measures how much fuel a vehicle consumes when traveling at its standard Speed Rating. The Economy Rating is expressed as kilometers traveled per units of fuel consumed.

If a vehicle is traveling at faster than its Speed Rating or is engaged in vehicle combat, it consumes fuel more rapidly than during normal operations. In this case, fuel consumption is expressed as a modified Economy Rating, as shown on the Economy Rating Table, p. 82.

RUNNING OUT OF GAS

If a vehicle runs out of fuel, it loses speed each turn at a rate equal to its Acceleration Rating multiplied by 2. When the vehicle's speed reaches 0, it grinds to a halt. To determine

ECONOMY RATING TABLE

Vehicle Speed	Economy Rating
Less than Speed Rating	Base Economy Rating
1 to 1.5 x Speed Rating	Base Economy Rating ÷ 2
Vehicle Combat	(Base Economy Rating ÷ 2) + .5

how far the vehicle travels as it coasts to a stop, use the following formula:

Distance = (.75 x starting speed^2) ÷ vehicle's Acceleration Rating

A driver may try to coax more distance out of a coasting vehicle by making a Vehicle Test. For every 2 successes, the driver may extend the coasting distance by the vehicle's Acceleration Rating.

Zak is running a contraband shipment in his t-bird, the Gray Ghost, from the Pueblo Corporate Council into the CAS sector of the Denver Front Range Free Zone. Unfortunately, on the last leg of his run, he cuts the altitude a little too closely and rips the underside of his fuel tank, leaking fuel across the Rocky Mountains. As Zak begins his final approach into the CAS sector at 1,000 meters per turn, the Gray Ghost's engine sputters and dies, having consumed its last drop of fuel.

The Gray Ghost has an Acceleration Rate of 100, so it loses speed each turn at a rate of 200 meters per turn. That means the t-bird will remain airborne for only 5 more turns. The t-bird will travel 7,500 meters before it comes to rest, as calculated with the coasting-distance formula:

(.75 x 1,000^2) ÷ 100 = 7,500

Unfortunately, that will put the t-bird down over some very rough badlands. A little farther past the badlands, however, lies a stretch of flat grassland, so Zak tries to coax some more distance out of the Gray Ghost.

Zak has a Vector Thrust Skill 6, and he allocates 3 Control Pool dice to the Vehicle Test. The Gray Ghost has a Handling Rating of 4. To simplify calculation, we'll assume all other modifiers cancel each other out, so the target number for the Success Test is 4. Zak's test generates 5 successes. The t-bird's Acceleration (100) multiplied by 5 equals 500, so Zak manages to make the Gray Ghost coast for 8,000 meters before it stops, rather than 7,500.

AIRCRAFT MANEUVERS

The base Economy Rating for fixed-wing aircraft assumes that the aircraft is making a normal takeoff or landing. When performing shortened or vertical landings or takeoffs (STOL, VSTOL, or VTOL operations), aircraft consume more fuel than normal. During a STOL takeoff, for example, an aircraft burns 20 percent of its initial fuel supply. A plane that takes off carrying cargo that exceeds its Load Rating also consumes extra fuel. To determine how much of an aircraft's initial fuel supply remains after an aircraft performs one of these maneuvers, multiply the craft's initial fuel capacity by the appropriate multiplier on the Flight Maneuvers Table.

These fuel-consumption rules do not apply to helicopters, zeppelins or LAVs.

FLIGHT MANEUVERS TABLE

Maneuver	Multiplier
STOL takeoff	.8
If cargo exceeds Load Rating	.7
STOL landing	.9
VSTOL takeoff	.7
If cargo exceeds Load Rating	.55
VSTOL landing	.85
VTOL takeoff	.6
If cargo exceeds Load Rating (tilt-wing aircraft)	.4
VTOL landing (tilt-wing aircraft)	.8

Wu Pi, a "free entrepreneur" in the Hong Kong Corporate Enclave, is delivering a shipment of chips from the remote district of Tsuen Wan to prospective clients in Vladivostok, Russia. Wu's Embraer-Dassault Mistral can perform very short takeoffs and landings (VSTOL), and that's a good thing, because Wu needs to take off from a small plateau nestled between some very steep mountains. He's got about 150 meters of runway—just enough for a VSTOL takeoff.

The Mistral has a standard fuel capacity of 2,000 liters, so the VSTOL takeoff will leave it with 1,600 liters of fuel (2,000 x .8). The Mistral has an Economy Rating of 2 km per liter, so Wu Pi will be able to travel 3,200 kilometers after taking off.

Running Out of Gas

If an aircraft runs out of gas, the pilot must make a Crash Test when the vehicle's speed falls below its Stall Speed Rating. If the test succeeds, the pilot makes a successful emergency landing at the end of its deceleration. The vehicle suffers 1D6 Stress Points and must resist 6L damage. However, no damage occurs to the passengers or cargo.

If the Crash Test fails, the airplane crashes immediately. Resolve crash damage per standard rules. When calculating crash damage, use the aircraft's Stall Speed and assume the aircraft travels the distance already calculated for its deceleration.

Let's get back to the Gray Ghost. As a t-bird, the Gray Ghost has about as much aerodynamic lift as a flying brick and has a Stall Speed of 600 meters/turn. Its initial speed was 1,000 meters per turn, and the t-bird is losing speed at a rate of 200 meters per turn, so Zak must make a Crash Test two turns after running out of fuel.

forget diamonds • drones are a girl's best friend.

by: Josie Cruse

« Nothin' like a dogfight with a dragon to make a girl feel alive!

« Helen Wheels

• All the bugs in Chicago these days make it unlikely your target will notice an extra one.

Kenshu Arachnoid Mini-Drone

• Tomtom

Everything was going great until the psycho in the Ares Citymaster tried to turn us into hood ornaments.

• Handles rough terrain like a dream, and adapts immediately to variable conditions.

Toyota MK•Guyver Search and Rescue Robot

by: Tom Giant

• flightfire•kasm.ares.com

• It's been around forever, but it's still a rigger's best friend for getting out of a tight situation.

• Sustained, wide-angle coverage with infrared screening—that's what I call a good smoke machine.

Citroën Browillard Smoke Generator

By: [illegible]

• Toymeister

• This thing looks so real that I feel like God working on the sixth day.

• Rigger X

For this test, Zak adds 4 Control Pool Dice to his Vectored Thrust Skill 6 and rolls 10 dice against a Target Number 4 (the t-bird's Handling Rating). The test yields 4 successes, so the Gray Ghost lands with a jolt and an ear-piercing screech—but the t-bird and Zak are both still in one piece.

ES

Drones consume fuel the time they are operating, when they are not mov- Use a drone's second omy Rating, called the Idle omy Rating, to determine much fuel a drone burns in idle operation.

GRADES

In the current world, not all are created equal. For mple, gasoline is available in ular, Plus, high-octane unleaded, decaffeinated, lso on. And jet fuel comes in more flavors. Better fuel roves a vehicle's perfor- e but costs more than reg- fuel. Lower-grade fuel is per than regular fuel but s performance.

To keep things simple, grades of fuel are available **dowrun:** Cheap, Regular, Premium. Regular has no on a vehicle's perfor- e or Maintenance Cost **Maintenance and ead,** p. 18, for more infor- on]. All vehicles are ed to use Regular-grade unless the player selects er grade. The effects of and Premium fuel are in the Fuel Grade Effects

Gamemasters can also cre- ther fuel grades if they wish. To determine the effects of other grades on the vehicle's Maintenance Cost and Economy , first determine the Acceleration increase or decrease the provides. As a rule of thumb, custom fuel grades should not se or decrease Acceleration by more than 5.

FUEL GRADE EFFECTS TABLE

Fuel Grade	Effects
Cheap	Reduce Maintenance Cost by 5 percent. (Multiply initial Maintenance Cost by .95 to determine new cost.) Reduce Acceleration Rating by 2. Reduce vehicle's Economy by 10 percent. (Multiply original Economy Rating by .9 to determine new Economy.)
Premium	Increase Maintenance Cost by 5 percent. (Multiply initial Maintenance Cost by 1.05 to determine new cost.) Increase Acceleration Rating by 2. increase vehicle's Economy by 10 percent. (Multiply original Economy Rating by 1.1 to determine new Economy.)
Custom Fuel Grades	**Effects**
Acceleration increase	Increase vehicle Maintenance Cost by 2 percent for each point of Acceleration increase. Increase vehicle Economy Rating by 1 percent for each point of Acceleration increase.
Acceleration decrease	Decrease vehicle Maintenance Cost by 2 percent for each point of Acceleration decrease. Decrease vehicle Economy Rating by 1 percent for each point of Acceleration decrease.

TEMPO RULES

The Maintenance and Overhead rules (p. 18) assume that the er is operating his vehicle under the circumstances of a "typi- shadowrun (breaking into a reinforced corporate compound de the city limits of a major metropolitan area such as Seattle, for example). For a rigger who undertakes other types of adventures (for example, smuggling, long-range operations, shadow trading in the Denver Front Range Free Zone and so on), players and gamemasters may choose to use the operations tempo, or "optempto," rules to calculate a rigger's maintenance, fuel and other overhead costs.

In military logistics, optempo is used to estimate the accrued costs for maintenance, fuel and overhead for a vehicle based on its mileage during a given period. The more mileage a vehicle accumulates (from deployments to hot spots, training exercises, and routine day-to-day use), the more fuel it burns, and the more wear-and-tear it accumulates. Conversely, a vehicle that spends most of its time sitting in the motor pool consumes virtually no fuel and requires far less maintenance than an active vehicle.

CALCULATING OPTEMPO

To use optempo rules to determine a vehicle's monthly Maintenance Cost, first determine the listed base price of the vehicle and all its modifications using the Vehicle List and the information in Vehicle Customization, p. 118 (not what the character actually paid). Divide that number by 20,000, rounding the value off to the nearest tenth. The result is the per-kilometer optempo rate of the vehicle.

To calculate the optempo cost for a particular adventure, multiply the total number of kilometers traveled by a vehicle during the adventure by the optempo rate. The final result is the optempo cost for that vehicle for that adventure.

COMBINING OPTEMPO AND REGULAR MAINTENANCE

Gamemasters may choose to combine the standard maintenance and overhead rules with the optempo rules using one of the following options.

Splitting the Cost

To "split the cost," reduce both a vehicle's monthly overhead rate and optempo mileage rate by half. The character pays half the normal monthly maintenance rate on the vehicle, whether or not he uses it during the month, and pays the optempo cost based on the kilometers driven in that month.

Frequently Used Vehicles

In this option, apply the optempo cost to vehicles that a character uses on a regular basis (for example, on every adventure). Use the standard overhead rate for vehicles that the character rarely uses (no more than once a month).

Significant Mileage

In the significant mileage option, optempo applies only to vehicles and drones that exceed a preset mileage threshold during an adventure. The gamemaster sets the mileage threshold, but may use the following suggestions as a rule of thumb: 200 kilometers per adventure for regular vehicles and 50 kilometers per adventure for drones.

Vehicles that do not exceed the threshold can be maintained by paying the standard Maintenance Cost.

QUALITY FACTORS

What Edges and Flaws are to **Shadowrun** characters, Quality Factors are to vehicles. They represent intangible factors in a vehicle's manufacturing process, such as attention to detail, process controls and professional workmanship, that affect a vehicle's purchase cost, performance, durability and Maintenance Cost. Quality Factors that improve performance also increase the purchase price of a vehicle. Other factors reduce the purchase price but diminish a vehicle's performance.

Players select Quality Factors during the vehicle design process (see **Vehicle Design and Customization,** p. 108). The Quality Factor modifier is applied to the vehicle's Mark-Up Multiplier when the player calculates the final vehicle cost (see **Determine Final Vehicle Cost**, p. 114). Apply any appropriate special design multipliers (such as for drones or security-grade vehicles) *after* adding or subtracting any Quality Factor modifiers. A vehicle cannot take a Quality Factor with a negative modifier if that modifier would reduce the Mark-Up Multiplier below .1.

In the interest of game balance, no vehicle should be designed using more than two Quality Factors.

The following entries describe available Quality Factors and their Mark-Up modifiers.

Master Workmanship
Modifier: +.10 per level (maximum 3 levels)

A vehicle with the Master Workmanship Factor is produced with loving attention to detail and craftsmanship. Because every part of the vehicle is expertly crafted and assembled, the vehicle runs better and suffers less damage from normal wear and tear, and so has much lower maintenance costs than a comparable vehicle of its type and price range.

For every level of Master Workmanship, reduce the vehicle's Maintenance Cost by 10 percent (multiply the cost by .9). See **Maintenance and Overhead,** p. 18, for more information on vehicle maintenance costs.

Lemon
Modifier: –.15 per level (maximum 3 levels)

A Lemon is a poorly built and shoddily designed vehicle that costs more to maintain than it's worth.

For every level of Lemon, increase the Maintenance Cost of the vehicle by 20 percent (multiply the cost by 1.2). See **Maintenance and Overhead,** p. 18, for more information vehicle maintenance costs.

Ruggedness
Modifier: +.50 per level (maximum 2 levels)

Ruggedness indicates that the vehicle is solidly built and withstand an excessive amount of punishment from heavy and abuse.

For every level of Ruggedness, a vehicle gains a –1 modifier on Stress Tests (see **Stress,** p. 25).

Fragility
Modifier: –.50 per level (maximum 2 levels)

A vehicle with Fragility is sensitive to overuse and b down easily.

For every level of Fragility, a vehicle receives a +1 modifier on Stress Tests (see **Stress,** p. 25).

Streamlined Layout
Modifier: +.25

A vehicle with Streamlined Layout has a well-des engine and chassis layout, which makes working on the v easier.

Characters working on a vehicle with Streamlined receive a –1 target modifier to all Build/Repair Tests.

Complex Chassis
Modifier: –.30

A vehicle with a Complex Chassis has a poorly de engine layout that makes work on the vehicle difficult.

Characters working on a vehicle with a Complex C receive a +2 target modifier to all Build/Repair Tests.

Custom Built
Modifier: –.20

Custom Built vehicles have very special designs and works. Consequently, modifications added later as vehic tomizations are more difficult to install. Double the parts co base time for all vehicle modifications installed during vehic tomization on Custom Built vehicles.

Prototype Model/Used Vehicle
Modifier: –.60

A Prototype Model vehicle is an experimental design b evaluation and debugging. As such, it has a number of hidd prises that won't be discovered until the vehicle is put thro paces. Similarly, a used vehicle may have hidden flaws that show up upon initial inspection or trial runs.

A Prototype Model/Used Vehicle starts out with 1D6 Stress Points. These Stress Points are not revealed until comes into play (either by the character pushing the limits vehicle or botching a Success Test under the Stress Rule o Gamemasters may reveal all of these hidden Stress Points first opportunity or dole them out over the course of an adv or campaign. Once revealed, these Stress Points are added vehicle's Stress Point total and may be reduced normally.

fety Certified
difier: +.15

A Safety Certified vehicle incorporates additional features and eguards in a vehicle's design to protect passengers in the event a crash or collision.

Any passenger or driver riding in a Safety Certified vehicle ceives a –1 target modifier when making tests to resist Collision mage. This modifier does not apply to vehicles resisting vehi- damage or passengers resisting damage from weapon attacks.

senger Trap
difier: –.15

A vehicle with the Passenger Trap Quality Factor has substan- d passenger safety measures because the manufacturer has cut ners to reduce the manufacturing cost of the vehicle.

Any passenger or driver in a Passenger Trap receives a +1 tar- t modifier on Resistance Tests made for Collision Damage.

This modifier does not apply to vehicles resisting vehicle mage or passengers resisting damage from weapon attacks.

VEHICLE SUBSYSTEM DAMAGE

Any time a vehicle sustains Moderate or greater damage from a single source, one or more major subsystems may be damaged. To determine if subsystem damage occurs, the controlling player rolls 1D6. Subtract 4 from the roll result if the vehicle sustained Moderate damage, 3 if the vehicle sustained Serious damage, and 2 for Deadly damage. Divide the modified result by 2, rounding up. The final result is the number of potential vehicle subsystems that may have taken damage.

To determine which subsystem is damaged, roll 1D6 and consult Table 1, or simply choose a category from Table 1. Next, consult the corresponding table and roll the appropriate number of dice (or simply choose) to determine the particular subsystem that is damaged. If the damaged vehicle is not equipped with the modification or feature that results from the dice roll, consider it a "no subsystem hit" for that particular result, or the gamemaster may roll again. Finally, roll 1D6 and consult Table 8 to determine the extent of subsystem damage. Refer to the **Subsystem Damage Notes** for explanations of specific damage results. Systems not listed in the notes appear elsewhere in this book.

Design options cannot take damage.

TABLE 1: MAJOR SYSTEM CATEGORIES (ROLL 1D6)

Result	Category	Corresponding Table
1	Vehicle Electronics	Table 2
2	Vehicle Controls	Table 3
3	Accessories	Table 4
4	Weapon Systems	Table 5
5	Engine	Table 6
6	Chassis	Table 7

TABLE 2: VEHICLE ELECTRONICS (ROLL 1D6)

Result	Category
1	ECM
2	ECCM
3	Sensor Systems
4	Other electronics or roll again on this table
5	ECD
6	ED

TABLE 3: VEHICLE CONTROLS (ROLL 1D6)

Result	Category
1	Rigger Control Box
2	Autonav
3	Remote Control Linkup
4	Handling
5	Drive-by-Wire System
6	Other control modification or roll again on this table

TABLE 4: ACCESSORIES (ROLL 2D6)

Result	Category
2	APPS System
3	Amphibious System
4	Anti-Theft System
5	Communications Gear
6	Drone Rack
7	EnviroSeal
8	External Cargo Mount
9	Life Support
10	Spotlight
11	Gamemaster's choice of *any* vehicle device or roll again on Table 1
12	Roll twice on Table 1

TABLE 5: WEAPON SYSTEMS (ROLL 1D6)

Result	Category
1–2	Turret
3–4	Vehicle Weapon
5–6	Target Acquisition System

TABLE 6: ENGINE (ROLL 1D6)

Result	Category
1	Gridlink
2	Turbocharger/Superconductive Drive
3	Engine Hit
4	Engine Customization
5	Nitrous Injector
6	SunCell

TABLE 7: CHASSIS (ROLL 1D6)

Result	Category
1	Fuel Tank
2	Passenger Compartment
3	Aggravated Body Damage
4	Armor Defeating Hit
5	Roll again on Table 1
6	Roll twice on Table 1

TABLE 8: DAMAGE SEVERITY (ROLL 1D6)

Result	Effect
1–2	Light Damage. The subsystem operates at reduc efficiency. Reduce by 1 any bonuses or extra d provided by modifications or accessories. (If ve cle has no such bonuses or extra dice, apply a target modifier to Success Tests made with damaged device/system.)
3–4	Moderate Damage. The subsystem is sufferin serious malfunction. Reduce by half their orig value any bonuses or extra dice provided by m ifications or accessories. (If vehicle has no bonuses or extra dice, apply a +3 target mod to Success Tests made with the dama device/system.)
5	Serious Damage. Vehicle accessories are inoper but repairable.
6	Deadly Damage. Subsystem destroyed beyo repair. Accessories must be replaced complete

SUBSYSTEM DAMAGE NOTES

Rigger Control Box: The attack disrupts the rigger control hardware installed in the vehicle and triggers an ASIST backlash. The rigger must make a Damage Resistance Test against *physical* damage. The damage Power Level is equal to the Power of the vehicle's attack (after Armor reductions), and the Damage Code is the result rolled on Table 8.

Handling: The attack damages the primary vehicle control mechanisms. Increase the Handling of the vehicle by 1 for Light damage, 2 for Moderate damage and 3 for Serious damage. If the Handling sustains Deadly damage, the vehicle automatically crashes.

Turret: The attack damages the servo-mechanism con the vehicle turret (if the vehicle has more than one tur gamemaster may select which is damaged). Weapons fitt that turret suffer a Damage Modifier based on the results 8. If the turret suffers Deadly damage, it is rendered inop and frozen in place.

Target Acquisition System: The attack damages key or electronic components relating to target-acquisition fu Missiles, sensor-enhanced weapons and other smart weapo fer a Damage Modifier based on the results of Table 8. If get-acquisition system suffers Deadly damage, the vehicle lock onto a target and is unable to fire smart weapons.

weapons, such as rockets, cannons and firearms, are not affected.

The base cost for repairing the target-acquisition system is one-half of the Parts Cost of the sensor system.

Engine Hit: The attack damages the engine, which in turn reduces the vehicle's Acceleration, Speed and Load Ratings. For Light damage, multiply all Ratings by .9 and round down to calculate the new ratings. For Moderate damage, multiply Acceleration, Speed and Load Ratings by .7 and round down to calculate the new ratings. For Serious damage, multiply Acceleration, Speed and Load Ratings by .4 and round down to calculate the new ratings. If the engine suffers Deadly damage, the vehicle loses power and decelerates at a rate equal to twice its Acceleration, and the driver must make a Crash Test.

The base cost for repairing the engine is equal to 40 percent of the vehicle's original cost plus any nuyen spent for engine customization (multiply the cost by .6).

Fuel Tank: The attack causes a leak in the vehicle's fuel system. For Light damage, calculate the loss rate by multiplying the fuel remaining by .01. The result is the amount of fuel that leaks each turn. For Moderate damage, calculate the loss rate by multiplying the fuel remaining by .05. For Serious damage, calculate the loss rate by multiplying the fuel remaining by .1. If the fuel tank sustains Deadly damage, it ruptures and the driver must make a Crash Test. (Pyromaniac gamemasters may also check to see if the destruction of the fuel tank results in an electrical fire or fuel explosion.)

The base cost for repairing the fuel tank is the vehicle's original cost multiplied by .9.

Passenger Compartment: The attack on the vehicle generates shrapnel in the passenger compartment. Passengers must make Damage Resistance Tests against physical damage. The damage Power Level is equal to half the Power of the attack against the vehicle (after armor reductions), and the Damage Code is the result rolled on Table 8.

Aggravated Body Damage: The attack seriously weakens the infrastructure of the vehicle. For Light damage, reduce the vehicle's Body by 1 (except Body 1 vehicles, which suffer no loss). For Moderate damage, reduce the vehicle's Body to one-half its value, rounded up. For Serious damage, reduce the vehicle's Body to one-third its original value, rounded up. Deadly damage to the vehicle's Body destroys the vehicle, and it automatically crashes.

The base cost for repairing the vehicle's Body is equal to the vehicle's original cost multiplied by .6.

Armor-Defeating Hit: The attack reduces the effectiveness of the vehicle's armor. Light damage reduces the Armor Rating by 1, Moderate damage reduces Armor by 3, Serious damage reduces Armor by 6, and Deadly damage reduces the Armor Rating by 10. Armor points lost in this manner are gone for good and can be recovered only by replacing the armor.

Note that this rule is separate from the Armor Degradation rules (p. 75, **Fields of Fire**). At the gamemaster's discretion, both sets of rules may apply.

REPAIRING SUBSYSTEMS

When repairing modifications and accessories, use the standard vehicle-repair procedure with the following exceptions.

To determine the cost of repair parts, first multiply the number of damage boxes by .05. Then multiply the result by the Parts Cost of the modification or accessory.

The target number for the Repair Test is based on the level of damage (L, M, S, or D) per standard rules. The base time for repair is equal to the base time for installing the modification or accessory.

See the **Vehicle Design and Customization** (p. 118) for more information about modification and accessory Parts Costs and base times.

ADVANCED GUNNERY RULES

The following optional rules are designed to enhance the "realism" of shooting weapons at or from vehicles.

FOOTPRINT

The discharge of intense, raw electrical power from a vehicle's transmitters shines like a beacon on the electromagnetic spectrum. Consequently, vehicles with strong transmitters can be easily targeted by sensor-enhanced weapons.

The Footprint Rating reflects this increased "visibility." The Footprint Rating is subtracted from the target number on tests made against a vehicle or device's Signature. To determine a vehicle's Footprint, add the Flux Ratings of all its transmitters (radios, remote-control decks, sensors, ECM), divide the result by 10 and round to the nearest whole number.

Josie Cruise is conducting reconnaissance from her van, Rough Rider. She is simultaneously operating a drone via a remote control deck (Flux 8) and a short-wave radio (Flux 6) to keep in touch with her teammates. That gives her a Footprint Rating of 1, calculated as follows:

[(8 + 6) ÷ 10] = 1.4, rounded to nearest whole number = 1

The van's standard Signature is 4, so tests made against its Signature would use a Target Number 3.

Reducing Footprint

A rigger can attempt to reduce her vehicle's Footprint Rating by making an Electronic Warfare Test against a target number equal to the Footprint Rating + 4. A number of Task Pool dice may be used in this test up to the character's skill/concentration rating level. For each success, reduce the vehicle's total Flux by 1, then re-calculate the Footprint Rating.

Each attempt to reduce Footprint requires a Complex Action. Riggers may make multiple attempts, and the effects of each attempt are cumulative. However, increase the Electronic Warfare Test target number by 2 on each additional attempt beyond the first.

Any time an Electronic Warfare Test generates a result of all 1s, *double* the vehicle's total Flux and re-calculate the Footprint accordingly.

Josie Cruise wants to reduce Rough Rider's Footprint Rating of 1, so she uses a Complex Action and makes an Electronic Warfare Test. She has Electronics 3, so she uses 3 dice for the test. The target number is 5 (Footprint 1 plus 4).

The test generates 3 successes, which reduces Rough Rider's total Flux from 10 to 7. Seven divided by

ten and rounded to the nearest whole number yields a 1, however, so the Footprint Rating remains the same.

Josie then uses another Complex Action and makes another Electronic Warfare Test. Again her test generates 3 successes, so now the total Flux drops from 7 to 4. Four divided by 10 equals 0.4, which drops to 0 when rounded to the nearest whole number. Thus, Josie has completely eliminated Rough Rider's Footprint.

BREAKING MISSILE-TARGET LOCK

To lock onto a target and fire a missile at it, an attacking vehicle must first detect the target vehicle with a sensor-based Perception Test (see **Missile Combat,** p. 59). Therefore, a target that manages to break contact with an attacker's sensors can cause missile attacks against it to miss.

To break a target lock, the character controlling the target vehicle must make a Hide Action before the missile strikes at the end of the Combat Turn in which it is fired. (Remember that doing so requires a Complex Action.) If the Driving Test for the action generates a number of successes greater than or equal to the missile's Intelligence, the character breaks the target lock, and the missile misses.

If the Hide Action Test generates a number of successes less than the missile's Intelligence Rating, the character doesn't shake off the missile. The character may make another attempt (assuming he has another Complex Action left before the end of the Combat Turn), but increase by 2 the number of successes required to break the target lock for each additional attempt.

NDED-RANGE MISSILES

Some anti-air missiles and advanced surface missiles have ges of 5 to 10 kilometers and greater. As a result, several turns pass before such a missile reaches its target. The Extended-ge Missile rule provides an alternate means for tracking mis- combat for such missiles.

his rule applies to any missile with an extended range er than 2 kilometers. Under this rule, the gamemaster treats missiles as vehicles operating with one goal: to close in on designated target (Accelerate) and then collide with it (Ram). **Accelerating/Braking,** p. 45, and **Ramming,** p. 47, in **le Combat** for details.)

Use the missile's Intelligence for the Driving Tests required ese actions. All missiles have a Handling of 4, and their ive is equal to the missile's Intelligence plus 2D6. Anti-sur- missiles have a fixed speed of 1,000 meters per turn, and r missiles have a fixed speed of 5,000 meters per turn.

VANCED REMOTE CONTROL RULES

The basic remote control rules in the **Drones** section provide ple, comprehensive system for running drones. Players who more complex drone rules can spice up their rigging reper- with the following rules.

PROGRAMMED DRONE COMMANDS

Phrasing comprehensible commands for drones can consume ble Combat Actions, and drones may misunderstand or mis- ret commands. Entering pre-programmed commands into a n's remote control deck can solve both of these problems.

If a rigger pre-programs the various commands required for a ular maneuver, he can then utter a single, short command is RC deck will send out the pre-programmed commands and matically direct the drones to perform the action. For example, ger might give the command "Home," and the rigger's car, ected via the remote-control network, would automatically to the rigger's position by following pre-programmed com- s from the deck. Alternately, a rigger could say "Pearl Harbor ," and five aerial attack drones would fly in a V-formation due , attacking any people or vehicles they see.

To use pre-programmed commands, a remote-control deck be equipped with Storage Memory as an accessory. Pre-pro- med maneuvers can be as simple or as difficult as the rigger es, but the following restrictions apply:

1. A pre-programmed command can only cover a single, ific task. For example, if a rigger wants to have a group of s fly in a formation in a certain direction, then change e, she must pre-program two separate commands, one for leg of the journey. Further, commands must state the specif- etails of the drone's task, leaving nothing vague or open- od. For example, if a rigger pre-programs drones to fly in for- on, she must specify the type of formation (including the dis- e between drones) the direction of travel, the distance to be eled and the speed.

2. The complexity of the command, as determined by the emaster using the **Skill Success Table** in **SRII** (p. 68), cannot greater than the remote control deck rating.

To enter a pre-programmed command into a remote-control deck, a rigger must make a Non-Matrix Programming Test during her preparation time before the run. The gamemaster sets the test target number, based on the command's complexity and the target numbers listed in the **Skill Success Table** (p. 68, **SRII**). The gamemaster should tell the player the target number before the player makes the test and give the player the option of reducing the command's complexity to lower the target number. Keep track of the number of successes achieved.

Every pre-programmed command takes up memory in the deck's storage. Calculate a command's size with the following formula:

([Command's Complexity Target Number]^2 x 100) ÷ Number of non-Matrix Programming Test successes = Memory Requirement in Mp

Calculate the time required to program the command with the following formula:

Target Number ÷ Number of non-Matrix Programming Test successes = hours needed to program

During a run, a rigger can activate a pre-programmed command simply by using a Free Action. The remote control deck then automatically directs the drones to act in accordance with the pre-programmed commands.

BACK-UP CHANNELS

Because the data-processing capability of a remote control deck is divided over three separate radio channels—the command channel, system channel and simsense channel—a rigger can reserve one of those channels as a "back-up" in case one of the other two channels goes down due to electronic warfare. If a channel has suffered degradation from MIJI, the rigger can choose to close down that channel and transfer the functions of the channel onto another one.

If a channel is serving as a back-up for a second channel, all actions performed on both channels suffer a +2 modifier. And because the volume of transmissions on the channels is higher, an intruder receives a −1 modifier when attempting to locate that channel (see **Signal Interception,** p. 68).

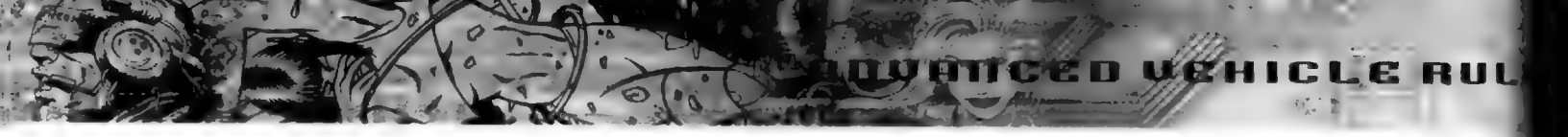
A rigger cannot move all three channels onto one frequency.

Otto Matick is using a remote control network to perform some scouting and fire support, when a jammer locates his command channel and starts jamming it. Otto decides to transfer the functions of the command channel to the system channel.

As long as Otto uses the system channel as a back-up channel for the command channel, he receives a +2 target modifier when using issuing commands to drones (normally transmitted via the command channel) and directing indirect fire (normally transmitted via the system channel). Furthermore, if the jammer tries to locate Otto's system channel, he receives a −1 modifier to his target number.

THE SERVER SYSTEM FOR CRDS

Normally, a cranial remote deck (CRD) has very low transmitting power, which forces a rigger to haul around power amplifiers, either on a bulky backpack or as part of a cyberlimb (taking up pre-



cious space that could be used for cyberguns, spurs and so on). Alternatively, a rigger may choose to configure his CRD as a super-subscriber to a conventional remote control deck.

In this option, the CRD reduces the number of drones the normal deck can control by one (since the CRD counts as one of the subscribers) and gives control of the remote control network to the CRD. The normal deck then becomes a "server" that provides auxiliary support to the CRD. The effective rating for the network is the rating of the CRD or the rating of the standard deck, whichever is lower. Options and accessories (such as ECCM, protocol emulation modules, BattleTac systems and the like) that are incorporated in either deck are both available. (Players should place the majority of remote control accessories on their server deck and as few as necessary on their CRDs, to save on Essence and monetary costs.)

The Range of a remote control server system is based on the Flux of the server deck. However, remember that the center of effect is the server, not the CRD. If the rigger wanders outside of the server's range, the CRD loses contact with the remote control network, and the rigger is dumped out of the system.

ADVANCED ELECTRONIC WARFARE RULES

These advanced rules for electronic warfare are to be used for MIJI attempts against remote control networks (see **MIJI,** p. 69).

RANGE AND PARTIAL MIJI ATTACKS

Normally, a remote control network is susceptible to MIJI only when its remote control deck is within the range of the intruder's electronic device. However, even if the target remote control deck is outside the intruding device's range, the intruder can still make a MIJI attack against any of the network's drones that are inside the intruding device's range.

In such cases, resolve electronic warfare per standard rules. However, only those drones inside the intruding device's range are affected. If a drone leaves the intruding device's range, it is free from the effects of MIJI.

If a rigger has jumped into a drone within the range of the intruding device, the rigger is vulnerable to the effects of dump shock if the intruder dumps the rigger through a successful jamming or interference attempt.

MIJI ON MULTIPLE CHANNELS

If an intruder has successfully intercepted two or all three channels of a remote control system, he can try to make a simultaneous MIJI blitz on all intercepted channels. When making a multiple-channel MIJI attack, the intruder makes a normal MIJI Test, but applies a +3 target modifier for each additional channel the intruder is trying to blitz. In other words, an intruder receives a +3 target modifier to the MIJI Test if attempting to use MIJI on two channels simultaneously, and a +6 modifier to the MIJI Test if attempting to use MIJI on all three channels of a remote control network.

An intruder can make only one type of MIJI attack whe ing a multiple MIJI attempt.

BARRAGE JAMMING

Barrage jamming is a jamming technique that jams a frequency bands. When using barrage jamming, a jamme not need to make an Interception Test and jams all c (including normal radio) at the same time. On the othe because the jammer is spreading his electromagnetic across a wide range of frequencies, he has a sharply r range and, more important, his own device/vehicle be more vulnerable to detection by enemy sensor systems an weapons.

When employing barrage jamming, the jammer auton ly jams all radio and radio-telephone communications and signal degradation on *all* of his opponent's Signal Monit every 3 points of Flux used in barrage jamming, 1 box o degradation on all of the opponent's Signal Monitors are

To determine the effective range of barrage jamming, all standard ranges by 20. In other words, the range for a jammer is equal to 500 meters, plus the barrage jamme multiplied by 200.

Additionally, barrage jamming reduces the Signature jammer. For every 2 points of Flux used in barrage ja reduce the jammer's Signature by 1. A jammer's Signature fall below 2, but any excess Signature reductions offset an ifiers that increase the Signature or Signature-based targe bers.

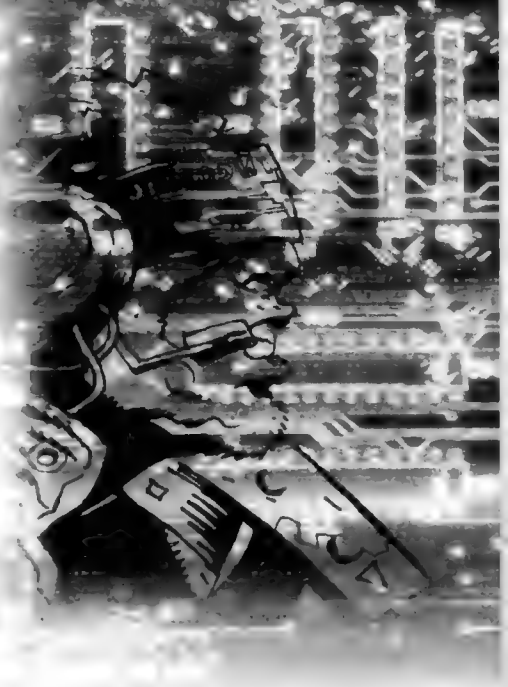
The tactic of barrage jamming does not work with ing, intrusion or interference.

HOT MIKE JAMMING

"Hot mike" is military slang, referring to situations in radio transmitter overrides all other signals on a frequenc venting other individuals from talking on that frequency and tively jamming it. This usually results from a faulty microp loose connection, but a similar effect occurs when a spe rude enough to interrupt another person's transmission. someone interrupts another person's transmission by ov the signal, soldiers say that the interrupter "stepped on" t mission.)

In **Shadowrun,** "hot mike" jamming is an improvised of jamming that uses standard transmission equipment, radios or remote control decks, in lieu of ECM. "Hot mik ming works on both standard radio communications (see **Equipment,** p. 184 in **SRII**) and remote control deck tra sions. However, when using "hot mike" jamming against control decks, the jammer receives a +2 target modifier MIJI Tests, because the set-up of a remote control netwo vides partial protection against accidental transmissions.

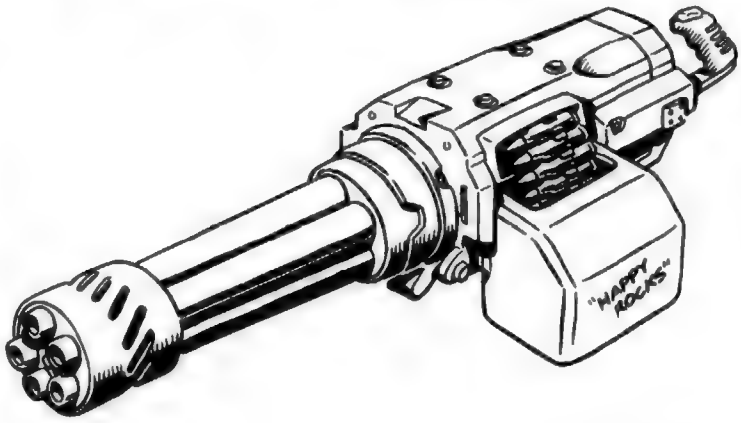
NEW TOYS



This section describes new weapons, drones and other accessories guaranteed to make the most jaded rigger character drool. Specific uses for many of these toys have been described in earlier chapters of this book. Rules for designing and modifying vehicles using this equipment appear in the **Vehicle Design and Customization** chapter, beginning on page 108.

The toys in this section are organized into groups by type, covering Weapons, Cyberware, Remote Control Accessories, and Drones and Robots. Each item includes a short description of the toy's creation and use in the **Shadowrun** world, followed by specific game information and rules for use in the game. The game statistics for each piece of equipment appear in a table at the bottom of each page.

Some equipment in this chapter represents new versions of equipment published in previous **Shadowrun** sourcebooks. At the gamemaster's discretion, the current versions of these pieces of equipment may remain available to his player characters, though he may choose to reduce the cost and Availability target number for his campaign. The new, revised versions of this equipment should be considered the state of the art for that equipment, and the gamemaster should set the cost and Availability at a level suitable for equipment and innovations new to the market.



MD

WEAPONS

ARES VENGEANCE & VANQUISHER MINIGUNS

The Vengeance and Vanquisher series of miniguns are the heavier cousins of the popular Vindicator minigun (p. 58, **Street Samurai Catalog** or p. 279, **SRII**) and use the Vindicator's rotating-barrel design. The CAS army recently chose to equip its Avenger VII motorized air-defense vehicle with Vanquishers.

Game Effects

Like the Vindicator, both the Vengeance and Vanquisher require 3 seconds (1 Combat Turn) of start-up time to get the barrels rotating at firing speed. Due to their high rate of fire, both the Vengeance and Vanquisher have a minimum rate of fire of 6 rounds per Combat Phase. They also have a maximum autofire rate of 15 rounds per phase, instead of the standard 10 rounds per Combat Phase. The Vengeance and Vanquisher follow the double-unmodified recoil rules for heavy weapons (p. 89, **SRII**), but mounting the miniguns on a vehicle hardpoint (see **Fixed Mounts,** p. 131) cancels out the special recoil modifier.

Vengeance and Vanquisher miniguns can make use of gyroscopic stabilization, but they *cannot* accept gas-vent recoil compensation. Likewise, they can accept top-mounted weapon accessories but they cannot carry barrel or under-barrel weapon accessories. Vengeance and Vanquisher miniguns can be mounted on vehicle weapon mounts (see **Vehicle Weapon Mounts,** p. 131), but they cannot be mounted on ordinary bipods or tripods.

Because of their heavy mass and punishing recoil, Vengeance and Vanquisher miniguns are not man-portable.

ARES VIGILANT & VICTORY AUTOCANNONS

The Vigilant and Victory autocannons are vehicle-mounted, autofire versions of the standard, single-shot assault cannons. These extremely popular heavy-suppression weapons commonly are mounted on all but the lightest armored personnel ca (APCs) and infantry fighting vehicles (IFVs).

Game Effects

Both the Vigilant and Victory are capable of firing in si shot (SS) and fully automatic (FA) modes. When firing in full-a matic mode, both cannons fire a minimum burst of 6 rounds have a maximum rate of fire of 12 rounds per phase.

The Vigilant and Victory autocannons can be mounted on fixed hardpoints or turrets. Because they are heavy wea they both negate the half-recoil modifier for hardpoints (see **Mounts,** p. 131). Vigilant and Victory autocannons can ac vehicle weapons accessories but no other weapon accessori

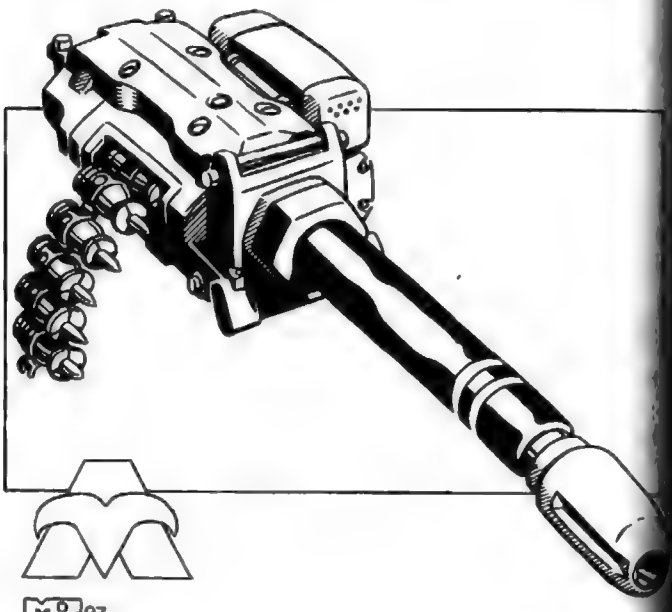
The Vigilant and Victory are not man-portable weapons Weapon Ranges Table on p. 107 for firing ranges.

RUHRMETALL VOGELJÄGER MULTI-ROLE ANTI-AIR MISSILE (MRAAM)

Produced by the Allied German States, the *Vogeljäge* Bird Hunter) is a multi-purpose anti-aircraft missile that ca used by dismounted personnel, ground vehicles and slow-fl aircraft such as helicopters, LAVs and zeppelins. Its multi capability and increased range makes it a vast improve over the man-portable SAM featured in the **Street Sa Catalog** (p. 59).

Game Effects

The Vogeljäger works only with vehicles that possess Le or higher sensor systems. The man-portable variant o



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	Type	Ammo	Mode	Damage	Weight	Avail.	Cost	Street Index
Vengeance	MMG	Belt	FA	9S	30	18/28 days	50,000¥	3.5
Vanquisher	HMG	Belt	FA	10S	45	18/28 days	75,000¥	3.5
Vigilant Cannon	Special	Belt	SS/FA	18D	90	20/45 days	90,000¥	5
Victory Cannon	Special	Belt	SS/FA	20D	105	20/45 days	125,000¥	5

Vogeljäger uses a launcher equipped with a Level 2 sensor unit. The man-portable sensor functions just like normal vehicle sensors, except that it has a +4 modifier for detecting objects on the ground.

When firing a Vogeljäger against a ground target, the attacker receives a +4 modifier to his Gunnery Test and the missile only inflicts 8D damage.

This missile has a range of 50 meters to 10 kilometers.

SAAB-SAAKER AIM-11R AIR-TO-AIR MISSILE

The "R" model is the latest in Saab-Saaker's AIM-11 series of air-to-air missiles. Like its predecessors, the AIM-11R is a short-range air interceptor weapon designed to be used with air-superiority fighters such as the Federated Boeing Eagle or the dozens of Eurofighter variants in existence around the world.

Game Effects

The Saab-Saaker AIM-11R may only be mounted on aircraft. When firing it against ground targets, the attacker receives a +4 modifier to his Gunnery Test and the missile only inflicts 8D damage. This missile has a range of 150 meters to 15 kilometers.

Sales of AIM-11Rs are tightly controlled. The gamemaster can set any Availability Rating he desires, though we recommend a target number of at least 20.

MITSUBISHI-GM OUTLAW VEHICLE MISSILE SYSTEM

The Outlaw vehicle missile system from Mitsubishi-GM is the successor to the original Bandit AGM system. Mitsubishi-GM will discontinue production of the Bandit beginning in the fourth quarter of 2058.

The Outlaw represents a radical restructuring of the Bandit system. Due to popular demand, the Outlaw features multi-platform capability and can be fired from air, ground and nautical vehicles. In addition, the electronics of the missile incorporate the new dual-fire mode technology. This feature enables the user to put the weapon on continuous target lock for improved strike accuracy, or on fire-and-forget shooting mode for quick engagements during evasive maneuvers.

But the most significant design change is the ordnance itself, which comes in three block versions. Block I Outlaw uses improved conventional munitions (ICM), which disperse micro-bombs when the missile is flying directly overhead its designated target or impact point. The compound detonations of the bombs do significant damage to all targets within the missile's area of effect, making ICM more effective against area targets than standard explosives.

Block IA Outlaw improves on the ICM concept with dual-purpose improved conventional munitions (DP-ICM). Instead of spherical micro-bombs, DP-ICM uses shaped charge explosives, oriented downwards by a training cloth streamer. The shaped-charged munitions give the bombs more penetrating power, making them effective against soft-skinned vehicles and light armor.

Block II Outlaw is an anti-armor missile designed to attack medium and heavy armor. On acquiring its target, Block II Outlaw flies directly overhead and fires its warhead into the vehicle from above, where armor is generally weakest. Block II Outlaw is also capable of direct fire when the target is concealed by overhead cover.

Game Effects

All versions of this missile have a range of 50 meters to 10 kilometers.

Block I Outlaw (ICM) functions as a special high-explosive missile. Instead of inflicting blast damage that diminishes in Power farther from the center of the explosion, ICM inflicts the *same* damage code on all targets within a fixed radius from the target point. The target and all characters, vehicles and other objects within a 10-meter radius must resist 14D explosive damage. This damage affects only objects within a 10-meter radius around the target. Vehicles automatically stage the damage down by one step to Serious, per the vehicle damage reduction rules (see **Vehicle Damage from Weapons,** p. 53).

Block IA Outlaw (DP-ICM) has the same effects as Block I, except that the shaped-charged munitions negate vehicle damage reduction. Vehicles must resist against 14D vehicle damage, but the vehicle gets the full benefit of its Armor Rating (this is an exception to the anti-vehicle munitions rule (see **Vehicle Damage from Weapons**).

Block II Outlaw behaves as a standard anti-vehicle missile and does 20D damage to the target alone. It is an armor-piercing, anti-vehicle weapon, so vehicle armor is only half as effective, and the vehicle does not reduce the Damage Code by 1 level (see **Vehicle Damage from Weapons**).

The top-attack capability of Block II is a special effect and does not affect game play.

TEXTRON "TRAPDOOR" SMART MINES

The Trapdoor is the latest generation of wide-area munitions (WAMs) designed to counter an enemy force's mobility. Using seismic, acoustic, magnetic anomaly and various other types of sensors, the Trapdoor passively scans for hostile vehicles. Once the mine detects a target, it validates the target based on criteria pre-programmed into its internal control electronics. If the target is confirmed as friendly, the Trapdoor stands down.

If the Trapdoor identifies the target as hostile, however, the mine launches a single submunition over the target. The submu-

	Conceal	Ammo	Mode	Weight	Availability	Cost	Street Index
Man-Portable Missile Launcher	—	1	SS	8	18/28 days	12,500¥	4

	Intelligence	Damage	Weight	Availability	Cost	Street Index
AIM-11R	6	14D	90	GM's discretion	25,000¥	—
Block I Outlaw (ICM)	5	14D	200	20/30 days	15,000¥	5
Block IA Outlaw (DP-ICM)	5	14D	200	20/30 days	25,000¥	5
Block II Outlaw	6	20D	200	20/30 days	35,000¥	5
Vogeljäger Missile	5	14D	17	18/28 days	5,000¥	4

nition acquires the target and fires an explosively formed penetrator (EFP) through the top of the target, destroying it. Not only does this make the Trapdoor an effective anti-tank mine, but its "top-attack" capability makes the Trapdoor equally effective in downing helicopters and LAVs flying at an altitude of less than 100 meters.

In addition to static placement, the Trapdoor may be deployed via rocket-artillery self-contained anti-armor mine systems (RASCAM). The RASCAM is compatible with both standard vehicle rocket launchers and the Outlaw VMS system (p. 93).

Game Effects

The Trapdoor smart mine is a stationary weapon system that consists of three parts: a Rating 4 sensor, a Rating 2 Pilot, and three submunitions.

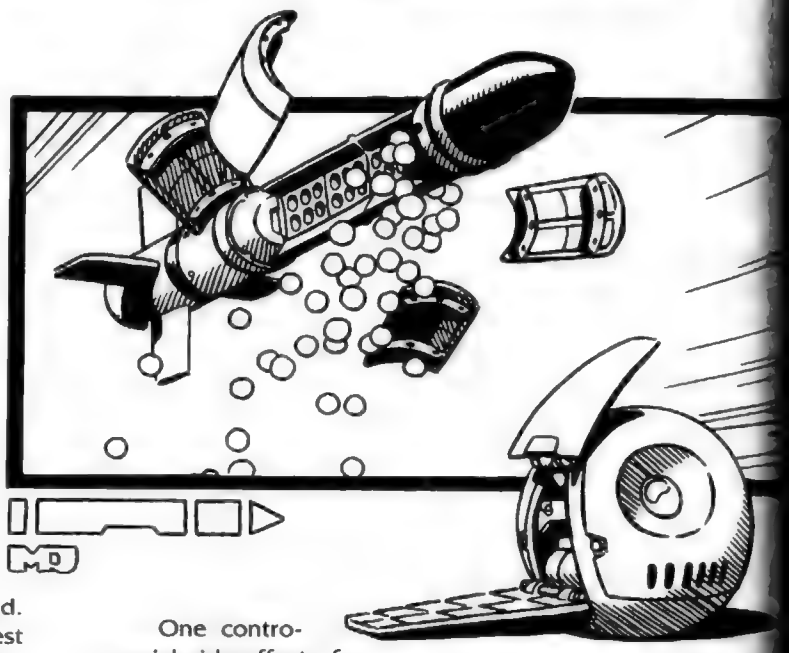
The Trapdoor uses its sensor to search for targets within its 500-meter scanning range. When it finds a target, the Pilot determines whether or not that target is friendly, based on pre-programmed criteria. The criteria can be anything its user wishes, within the limits of what the mine can comprehend. During programming, the mine makes a Comprehension Test against the user's criteria (see **Issuing Commands,** p. 66). The gamemaster should tell the player the target number for the test and give him the option to downgrade the criteria. Programming a Trapdoor mine requires one Complex Action.

If the target is hostile, the mine launches one submunition into the air. Make a Sensor-Enhanced Gunnery Test (see **Sensor-Enhanced Gunnery,** p. 58), using the mine's Pilot Rating in place of the Gunnery Skill. The submunition has a Damage Code of 14D and is an anti-vehicle, armor-piercing submunition (which means that the vehicle does not reduce the Damage Level by 1 and can use only half of its Armor Rating, rounded down, to reduce the submunition's Power).

Trapdoors may be deployed manually or via a RASCAM rocket. A RASCAM rocket holds eight mines. When placing mines, make an Indirect Fire Test (p. 60). The location determined by the test (after accounting for scatter direction and distance) is the center of effect. The mines deploy in an octagonal pattern for 50 meters around the center of effect.

LORAL-VOUGHT "ZAPPER" STATIC DISCHARGE ROCKETS

The "Zapper" static-discharge rocket is a specialized weapon used against drones. Rather than a high-explosive warhead, the zapper carries an electrically charged dielectric, encased in alternating layers of conductive metal and ceramic insulation. On impact, the warhead acts as a giant capacitor and discharges a massive electrical surge into the drone, causing its circuitry to burn out.



One controversial side-effect of the zapper is that, as it burns out the simsense circuitry in a drone, it creates a backlash of garbled ASIST signals and spike[s] affect the controlling rigger. These ASIST backlashes often c[ause] convulsions and fatal strokes or aneurysms in riggers. The U[nited] Nations is currently debating whether to include zappers a[mong] the list of banned "cruelty" weapons, alongside land mines, b[lind]ing lasers and chemical-biological weapons.

Game Effects

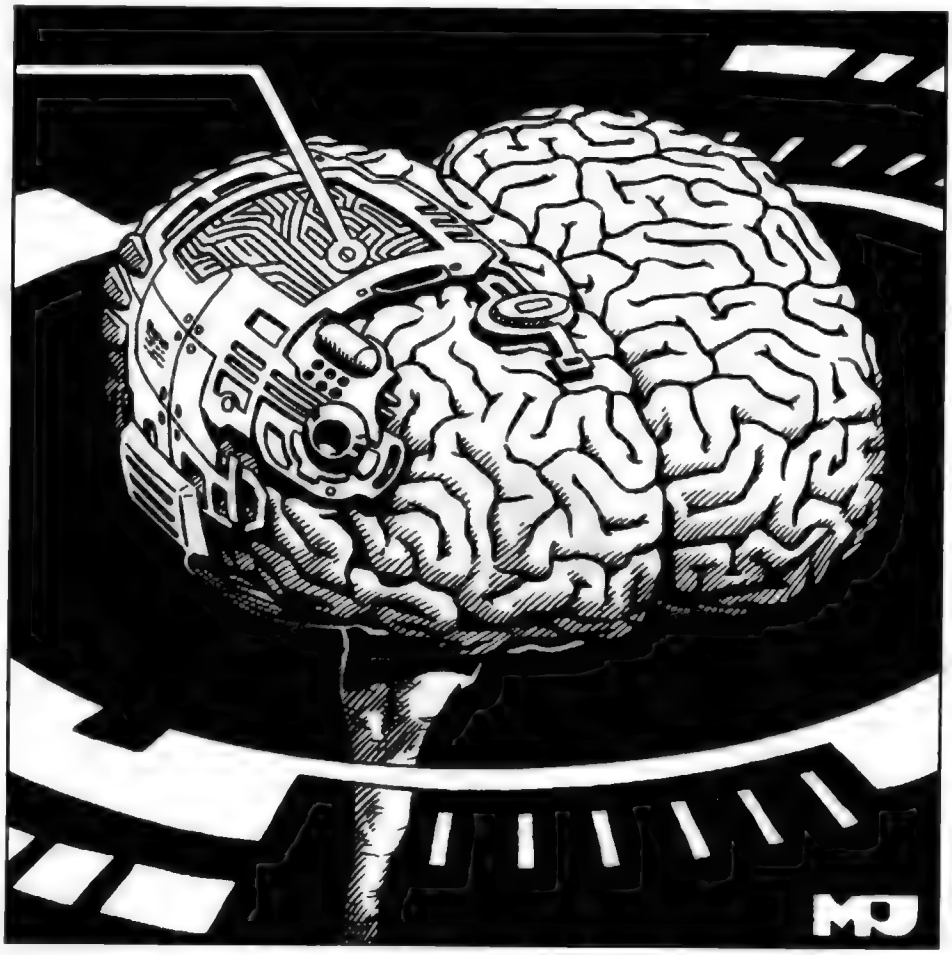
Zapper warheads behave as normal anti-vehicle rockets, [with] one exception. In addition to damaging the vehicle, the elect[rical] discharge also creates a disruptive simsense signal that affects [rig]gers and other characters controlling the vehicle cybernetic[ally] either by being jacked into the vehicle or directly controll[ing] through a remote control deck.

If the rocket does damage to the drone, the rigger [must] make a Willpower Test to resist Physical damage. The Pow[er] the attack is 7 plus the rating of the rigger's VCR implant [(the] more wired the brain is, the more susceptible it is to damage). [The] Damage Level is one step higher than the Damage Level [sus]tained by the vehicle from the attack. (For example, if the ve[hicle] suffered Light damage, the rigger must resist Moderate dam[age] and so on.) If the rigger is controlling the vehicle by remote c[on]trol, apply a –2 modifier to this test, because the deck ab[sorbs] some of the effects.

	Conceal	Ammo	Mode	Damage	Weight	Availability	Cost	Street Index
Trapdoor	8	3	SS	14D	15	14/21 days	10,000¥	4

	Intelligence	Damage	Weight	Availability	Cost	Street Index
RASCAM w/8 Trapdoor Mines	—	—	160	14/21 days	100,000¥	4
"Zapper" Static Discharge Rockets	NA	16D	25	10/14 days	2,500¥	2.5

Non-riggers controlling a vehicle cybernetically, as well as riggers using the captain's chair mode (see **Operative Modes,** p. 65 in **Drones**), do not suffer as severely as riggers directly controlling a vehicle. In these circumstances, the character receives Stun damage, not Physical damage. See p. 107 for firing ranges.



LORAL-VOUGHT "JABBERWOCKY" JAMMER MUNITIONS

The Jabberwocky adds a new twist to the phrase "electronic warfare." Instead of an explosive warhead, the Jabberwocky disperses electronic transponders that jam sensors, voice radio and digital transmission systems. Jamming transponders may be set to activate on dispersal, after a pre-set time delay or upon detection of transmission signals within the area of effect.

Game Effects

Jammer rockets and missiles behave as standard rockets or missiles until impact. On impact, the missile scatters jamming transponders that may jam sensors (as ECM), radio communications, or remote-control transmissions (the type is pre-determined when purchasing the munition and cannot be changed after the fact). Anti-sensor jammers act as Level 4 ECM (see **Electronic Countermeasures,** p. [illegible], while anti-remote jammers act as Level 4 jammers (see **Jamming,** p. 71).

The transponders affect a circular area with a radius equal to 50 meters plus 3D6 times half the number of successes generated on the Gunnery Test, rounded up (50 + [3D6 x (Gunnery Test successes ÷ 2)]). The transponders have a Flux of 6 for resolving electronic warfare results, but they do not affect transmissions outside the area of effect. Jamming from Jabberwocky transponders affects all transmissions of the transponder's type, whether friend or foe. Jabberwocky munitions may be fired only from vehicle weapon mounts. See p. 107 for firing ranges.

LORAL-VOUGHT "SILENCER" ADVANCED ANTI-RADIATION MUNITIONS (AARM)

Loral-Vought's Silencer series of munitions are an advanced version of the high-speed anti-radiation missiles (HARMs) of the previous century. Officially designated as advanced anti-radiation munitions (AARMs), Silencers lock onto the emissions of sensor systems as well as anti-sensor ECM.

Game Effects

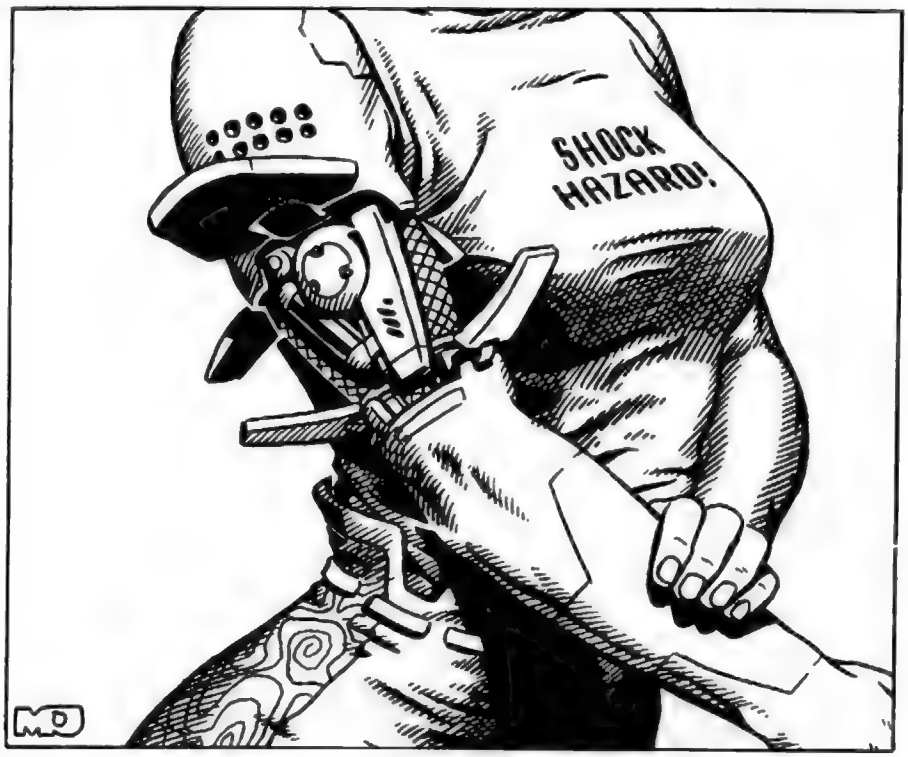
AARMs behave according to the missile combat rules on page 59, with one exception. Rather than using the opposing vehicle's Signature as a target number, the AARM target number is equal to 12 divided by the highest active Flux Rating from the target vehicle's Sensors or ECM (rounded down). The target number cannot drop below 1. AARMs are vehicle missiles and can be fired from vehicle weapon mounts only. The Silencer has a range of 50 meters to 12 kilometers.

CYBERWARE

CRANIAL REMOTE DECKS

Cranial remote decks (CRDs) represent a long-awaited revolution in rigger technology. Incorporating some of the computer and microtronic advances used in cranial cyberdecks for the past six years, the rigger carries the miniaturized cranial remote deck in his head, freeing the rigger from a fixed station and giving him mobility within his network's area of coverage. CRDs also use ESC-Mitre's modular hardware architecture, providing CRDs with the operational flexibility of desktop systems.

	Intelligence	Damage	Weight	Availability	Cost	Street Index
Jabberwocky Rocket	NA	Special	200	12/21 days	9,000¥	5
Jabberwocky Missile	3	Special	200	12/21 days	14,000¥	5
Silencer AARM	5	16D	250	16/28 days	25,000¥	5



Game Effects

Using a cranial remote deck (CRD) is the same as using a normal remote control deck, except that cranial remote decks have a Flux Rating of 0, due to their small size. If a rigger wishes to increase a CRD's transmission power, he must connect the CRD to an external signal amplifier. CRD power boosters and signal amplifiers can be mounted on backpacks, and a few of them can even be incorporated into cyberlimbs.

The table on page 96 provides statistics for the cranial remote deck, as well as all deck accessories also available in CRD form (see **Remote Control Accessories,** p. 97). Riggers with CRDs may use headware memory (p. 247, **SRII**) for the same purposes as remote control storage memory.

CYBERLIMB SIGNAL BOOSTERS

Cyberlimb signal boosters consist of high-powe relays and signal amplifiers stored inside a cyberli They amplify the signals of transmitters such as he ware radios and cranial remote decks, thus increa the transmitter's effective range and resistance electronic warfare. Signal boosters function for hours before requiring recharging.

Game Effects

Cyberlimb signal boosters increase the Flux Ratin a cranial remote deck or headware radio by the bo er's rating. A signal booster installed into a cybe takes up all the available accessory space in a limb other accessory, including increased Strengt Quickness, may be installed in the cyberlimb.

Signal boosters are available in Ratings from 10. If a rigger has both a CRD and a cybernetic r only one device can draw power from the s booster at a time.

SNAKE-EYES REMOTE INTERFACE LINK

Snake-Eyes integrates cybersensory systems the interconnectivity of the remote control net. Su Eyes allows a cyber-enhanced user to transmit time audio/visual data to a remote control deck receive simsense from other remotes. A Batt FDDM cyberware extension module is now available for the Snake-Eyes brings unit communications to a new level.

Game Effects

The Snake-Eyes interface link allows a rigger to see and everything that a cyber-enhanced character sees or hears. Th ger can also communicate with the character through the face, but she has no control over the character's actions. A acter connected to a remote control network via the Snake link counts against the remote control deck as one drone, reducing the number of drones the deck can actively contro

The remote interface link also allows the rigger to send sense data from another drone to the character. The characte

	Essence Loss	Cost	Availability	Street Index
Remote Control Deck	0.3	25,000¥ x Rating	4/72 hours	2
BattleTac IVIS Master Unit (CRD)	0.15	150,000¥	8/14 days	3
BattleTac FDDM Master Unit (CRD)	0.15	200,000¥	10/21 days	3
Remote Control Encryption Module	0.2	Rating x 10,000¥	(Rating)/(Rating) days	3
Rigger Decryption Module	0.2	Rating x 17,500¥	(Rating +2)/(Rating) days	3
Remote Control ECCM				
Ratings 1–3	0.2	Rating x 15,000¥	4/7 days	2
Ratings 4–6	0.3	Rating x 35,000¥	6/14 days	3
Ratings 7–9	0.4	Rating x 75,000¥	12/28 days	4
Rating 10	0.45	900,000¥	18/45 days	—
Rigger Protocol Emulation Module	0.2	Rating x 5,000¥	(Rating +2)/(Rating) days	2
Cyberlimb Signal Booster	—	Rating x 15,000¥	6/72 hours	1.5
Snake-Eyes Remote Interface Link	1.0	150,000¥	6/12 days	2.5
Snake-Eyes FDDM Module	0.1	70,000¥	10/21 days	3

see, hear and perceive ything that the drone per- . The character can termi- the Interface with the drone, cannot connect to another without petitioning the first.

Keep in mind that the inter- link does not enable the -enhanced character to control drones or issue ands to them; that is the rig- prerogative. The rigger run- the network must grant per- on for the character to per- through a drone, and the has the authority to change minate a connection.

The Snake-Eyes system es the user to possess a um of Commlink II (p. 76, **Samural Catalog,** or p. **SRII**), cybereyes and ears. The Snake-Eyes sys- interfaces with the remote ol net through the simsense system channels (which py two of the commlink els).

e Eyes FDDM Module

The Snake Eyes FDDM mod- an additional accessory for emote interface link. With FDDM module, the connect- haracter can transmit target to other drones and call for s on targets using indirect ee **Indirect Fire,** p. 60).

MOTE CONTROL CESSORIES

OTE CONTROL DECK

The introduction of ESC- e's new modular hardware m has breathed new life into old rigger standby. The modu- ystem allows a rigger to attach ional accessories, such as storage memory, protocol emulation dules and the new BattleTac drone applications, to his main sys- deck. In addition, due to the increasing demand for cyberneti- controlled decks, all remote control decks produced beginning in the late 2058 model year will feature datajack links exclusively; remote control decks with video screens and manual controls will be phased out.

Game Effects

This deck is the same as the basic remote control deck (abbreviated as RC deck) listed on page 253, **SRII.** Note that current editions are strictly cybernetically controlled, which requires the user to possess at least a datajack.

The rating of the deck equals the maximum number of drones a deck can actively manage at any one time. Remote control decks have a starting Flux Rating of 2.

For more information on how to operate remote control decks, see **Remote Control Networks,** page 62.

BATTLETAC™ IVIS

The success of the BattleTac™ system has resulted in two new variants now available for remote control systems: BattleTac IVIS and BattleTac FDDM. IVIS stands for Inter-Vehicle Information System and enhances the data-sharing capabilities between the remote control deck and drones. By improving information-sharing, these systems enable drones to execute more complex and sophisticated tactics to accomplish their assigned tasks.

Game Effects

In game terms, BattleTac IVIS does one of two things: it provides extra dice for a drone's Comprehension Test, or it creates a dice pool, known as the IVIS Pool, that can be used for tests made by drones. To use the IVIS system, the remote control deck or CRD must carry the master unit as an accessory. In addition, only drones whose pilots have been modified to interact with BattleTac IVIS receive the benefits of this system. For more information, see **The BattleTac IVIS System,** page 67.

BATTLETAC IVIS MASTER UNIT (RC DECK)

Weight	Cost	Availability	Street Index
1	75,000¥	8/14 days	3

DRONE MODIFICATION FOR BATTLETAC IVIS

Design Specifications

Cost: Pilot Rating x 250 points
CF Consumed: 0 CF
Load Reduction: 0 kg

Customization Specifications

Parts Cost: Pilot Rating x 25,000¥
Parts Availability: 8/14 days
Street Index: 3
Base Time: 64 hours
Skill: Computer B/R
Target Number: 4
Equipment Needed: Microtronics Shop
CF Consumed: 0 CF
Load Reduction: 0 kg

BATTLETAC FDDM MASTER UNIT (RC DECK)

Weight	Cost	Availability	Street Index
1	125,000¥	10/21 days	3

DRONE MODIFICATION FOR BATTLETAC FDDM

Design Specifications

Cost: Pilot Rating x 350 points
CF Consumed: 0 CF
Load Reduction: 0 kg

Customization Specifications

Parts Cost: Pilot Rating x 35,000¥
Parts Availability: 10/21 days
Street Index: 3
Base Time: 64 hours
Skill: Computer B/R
Target Number: 4
Equipment Needed: Microtronics Shop
CF Consumed: 0 CF
Load Reduction: 0 kg

	Weight	Cost	Availability	Street Index
ote Control Deck	3	5,000¥ x Rating	4/72 hours	2

BATTLETAC™ FDDM

The BattleTac FDDM (Fire Direction Data Manager) is the second spin-off from the BattleTac™ information system. The FDDM system enables one drone to act as a spotter, relaying targeting data to other drones via the remote control network. This allows drones that cannot "see" the target to fire on it.

Game Effects

The BattleTac FDDM system allows one drone to fire its weapons at a target detected by another. The remote control deck must carry the master unit as an accessory. Both the spotting drone and the firing drone must be adapted for the BattleTac FDDM. For more information, see **Indirect Fire,** page 60.

REMOTE CONTROL ENCRYPTION MODULE (RCEM)

Though remote control decks hop from frequency to frequency to maintain signal security, signals are still occasionally intercepted. To guard against this, the remote control encryption module provides an added layer of communications security by encoding and decoding the digital signals in a secure routine. However, because of the special digital nature of MSST protocol, normal crypto circuit routines (p. 77, **Street Samurai Catalog**) are incompatible with remote control decks.

Remote control encryption module encryption routines comply with both government (the NSA) and corporate (ITCC) regulations.

Game Effects

The remote control encryption module (RCEM) encodes and decodes remote control signal transmissions, making them indecipherable to intruders who intercept a remote control channel. Only rigger decryption modules (see below) can break the encryption of RCEMs. Data codebreakers (p. 243, **SRII**) and Scramble Breaker HDs (p. 81, **Street Samurai Catalog**) are ineffective against RCEM encryptions, because the RCEM uses entirely different encryption routines.

Remote control encryption modules are available in ratings of 1 through 10. For more information on using RCEMs, see **Signal Interception,** page 68.

RIGGER DECRYPTION MODULE

The rigger decryption module is a diagnostic tool used by security riggers. This module's firmware contains sophisticated cryptographic routines that enable a user to test the encryption of his rigged security systems and drones. The external version of this module is mounted in-line between the rigger's system-control-rig dataport and the system undergoing diagnostics. Remote systems require the internal model, which must be installed the RCD. The higher-rated the module, the more protoc programmed into its firmware, up to a maximum rating o

Game Effects

The rigger decryption module decodes encryption used by the RCEM (see above) or by CCSS security syste available in Ratings 1 through 8. For more information o rigger decryption modules, see **Signal Interception,** page **Defeating Deck Encryption,** page 69.

REMOTE CONTROL ECCM

ECCM, or electronic counter-countermeasures, use ters and signal-gain amplifiers to increase the clarity of control transmissions. ECCM defends the integrity of a control network from outside noise, whether due to e solar activity or wanton jamming by a hostile intruder.

Game Effects

Remote control ECCM reduces the effects of MIJI against a remote control channel. Because it uses electrica to filter out garbage and boost valid signals, ECCM redu Flux Rating of the remote control deck when active. F information on using ECCM and its effects, see **Sens Remote Deck Ranges,** page 30, and **Regenerati Degradation,** page 72.

Vehicle ECCM (see **ECM,** p. 31) can also be used to act MIJI. However, remote control ECCM does not have a against sensor ECM.

RIGGER PROTOCOL EMULATION MODULE

The rigger protocol emulation module is an important security riggers who perform their own diagnostics. The allows a rigger to emulate many of the various protocols, ing CCSS, used on contemporary rigged security syste drones. The external version of this module is mounte between the rigger's system-control-rig dataport and the undergoing diagnostics. Remote systems require the model, which must be installed inside the RC deck. The rated the module, the more protocols are programmed firmware, up to a maximum rating of 10.

Game Effects

The rigger protocol emulation module is necessary for ing and "hijacking" a rigged security system. It is also used ducting meaconing, intrusion, and interference attempts a

	Weight	Cost	Availability	Street Index
Remote Control Encryption Module	0.5	Rating x 5,000¥	(Rating)/(Rating) days	3
Rigger Decryption Module	0.5	Rating x 7,500¥	(Rating +2)/(Rating) days	3
Remote Control ECCM				
Ratings 1–3	1.5	Rating x 7,500¥	4/7 days	2
Ratings 4–6	2	Rating x 15,000¥	6/14 days	3
Ratings 7–9	2.5	Rating x 35,000¥	12/28 days	4
Rating 10	2.5	500,000¥	18/45 days	—
Rigger Protocol Emulation Module	0.5	Rating x 5,000¥	(Rating +2)/(Rating) days	2
Signal Amplifier	1 x Rating	Rating x 250¥	(Rating)/(Rating x 12) hours	1.5
Storage Memory	1	Mp x 5¥	2/24 hours	1

te control network. For more information, see **MIJI,** page 69, and **Adjust to Protocols,** page 80.

NAL AMPLIFIERS

Remote control decks have a fixed supply, which in turn gives them d ranges and limited resistance to tronic warfare. Signal amplifiers are l accessories that boost the electromagnetic power available for transmission, increasing a remote control deck's tive range and making it less vulner-

e Effects

Signal amplifiers increase a remote ról deck's Flux Rating, which eases the effective range of a remote rol deck and makes it more resistant ectronic warfare. For more informa-, see **Sensor and Remote Deck ges,** page 30, and **MIJI,** page 69.

In the interests of game balance, emasters should restrict available signplifiers to Ratings of 1 through 10.

OTE CONTROL RAGE MEMORY

Storage memory is just as important for remote control decks is for cyberdecks. Without storage memory, how could a rigrecord the images being received from the drones under her trol? It is a foolish rigger who deploys her drones without storage memory to record the results.

CHER JACKS

The success of cyberdeck hitcher jacks prompted the velopment of hitcher jacks for remote control decks. These ssories enable a second individual to plug into a rigger's work, providing a second set of eyes to watch the operation increase awareness of the remote control operation.

e Effects

Hitcher jacks for remote control decks work the same way as y do for cyberdecks. They allow other characters to perceive erything the rigger sees and does. If the rigger is in captain's-r mode, so is the observer; if the rigger is directly controlling rone, the observer perceives only the signals from that drone. cher jacks also allow an observer to communicate with the rig-, but they do not provide the observer with any control over operation.

TAPS SHARPSHOOTER AUTOSOFT

Design Specifications
Cost:
Ratings 1–2: Rating x 2,500 points
Ratings 3–5: Gamemaster's discretion
CF Consumed: 0 CF
Load Reduction: 0 kg

Customization Specifications
Parts Cost:
Ratings 1–2: Rating x 250,000¥
Ratings 3–5: Gamemaster's discretion
Parts Availability:
Ratings 1–2: 8/14 days
Ratings 3–5: Gamemaster's discretion
Street Index:
Ratings 1–2: 3
Ratings 3–5: —
Base Time: 72 hours
Skill: Computer B/R
Target Number: 6
Equipment Needed: Microtronics Kit, Vehicle Shop
CF Consumed: 1 CF
Load Reduction: 0 kg

The maximum number of jacks a remote control deck can handle is equal to its rating.

AUDIO/VISUAL SCREEN DISPLAYS

With the shift to full cybernetic controls, screen displays are necessary for displaying real-time footage to other people. The audio/visual screen displays use the latest in miniaturized multimedia technology to convey video feeds as well as real-time sound recordings of events being observed by a drone.

Game Effects

These 11-inch LCD screen attachments display the rigger's point of view from the remote control network. The screens also enable a rigger to communicate with viewers, either by voice or by typing text. Viewers, however, cannot talk back, unless the remote control deck is equipped with an intercom.

A rigger can also connect multiple screens to a remote control deck so that each screen displays a single drone's point of view. The maximum number of screens that may be connected to a remote control deck is equal to the deck's rating.

INTERCOM SPEAKER

An often overlooked accessory to any remote control network is a two-way intercom. This minor yet important device facilitates communication between the rigger and onlookers. Additionally, the speaker has a port that enables any voice radio to be connected to the intercom.

Game Effects

The intercom speaker allows two-way communication between the rigger and people within close proximity to the remote control deck. Without an intercom speaker, a rigger has to focus attention on her meat body to speak with her own vocal cords. (Doing so requires a Complex Action and imposes a +8 modifier to all actions taken while the rigger is speaking.)

AUTOSOFTS

Autosofts are expert systems that augment the decision-making capabilities of drones in limited areas of knowledge. Autosofts add their rating to the Pilot Rating of the drone when the drone performs an action that falls under the autosoft's area of expertise. Currently, two autosoft programs are available: TAPS Sharpshooter and IPA ClearSight.

	Weight	Cost	Availability	Street Index
cher Jacks	0	Rating x 100¥ per jack	2/48 hours	1
dio/Visual Screen Displays	0.5	100¥	2/24 hours	1
rcom Speaker	0	25¥	2/24 hours	1

IPA CLEARSIGHT AUTOSOFT

Design Specifications
Cost:
Ratings 1–3: Rating x 2,500 points
Ratings 4–5: Gamemaster's discretion
CF Consumed: 0 CF
Load Reduction: 0 kg

Customization Specifications
Parts Cost:
Ratings 1–3: Rating x 250,000¥
Ratings 4–5: Gamemaster's discretion
Parts Availability:
Ratings 1–3: 8/14 days
Ratings 4–5: Gamemaster's discretion
Street Index:
Ratings 1–3: 3
Ratings 4–5: —
Base Time: 72 hours
Skill: Computer B/R
Target Number: 6
Equipment Needed: Microtronics Kit, Vehicle Shop
CF Consumed: 1 CF
Load Reduction: 0 kg

TAPS Sharpshooter Autosoft

TAPS stands for target-acquisition processing system. The TAPS Sharpshooter is a target acquisition and gunnery expert program that enables drones to fire more accurately. This accessory allows a rigger to mass more effective firepower without the need for direct involvement in every step of the attack.

Game Effects

TAPS Sharpshooter adds its rating to the drone's Pilot Rating for all Gunnery Tests made with the drone. This autosoft may not be used while a rigger is directly controlling the drone. The TAPS Sharpshooter is available in Ratings 1–5.

IPA ClearSight Autosoft

ClearSight IPA makes use of the latest imagery-analysis expert systems available from the intelligence community. This accessory allows a rigger to identify a fuzzy image in mid-run—rather than later suffering the consequences of ignorance.

Game Effects

IPA ClearSight adds its rating to the drone's Pilot Rating for Perception Tests made with the drone. Additionally, a rigger can use it in conjunction with her own Intelligence for general Perception Tests. In this case, the ClearSight Rating may not exceed the rigger's Intelligence Rating.

IPA ClearSight may not be used for any combat-related Success Tests. The IPA Clearsight is available in Ratings 1–5.

DRONES AND ROBOTS

AEROQUIP "REDBALL EXPRESS" LONG-RANGE RESUPPLY DRONE

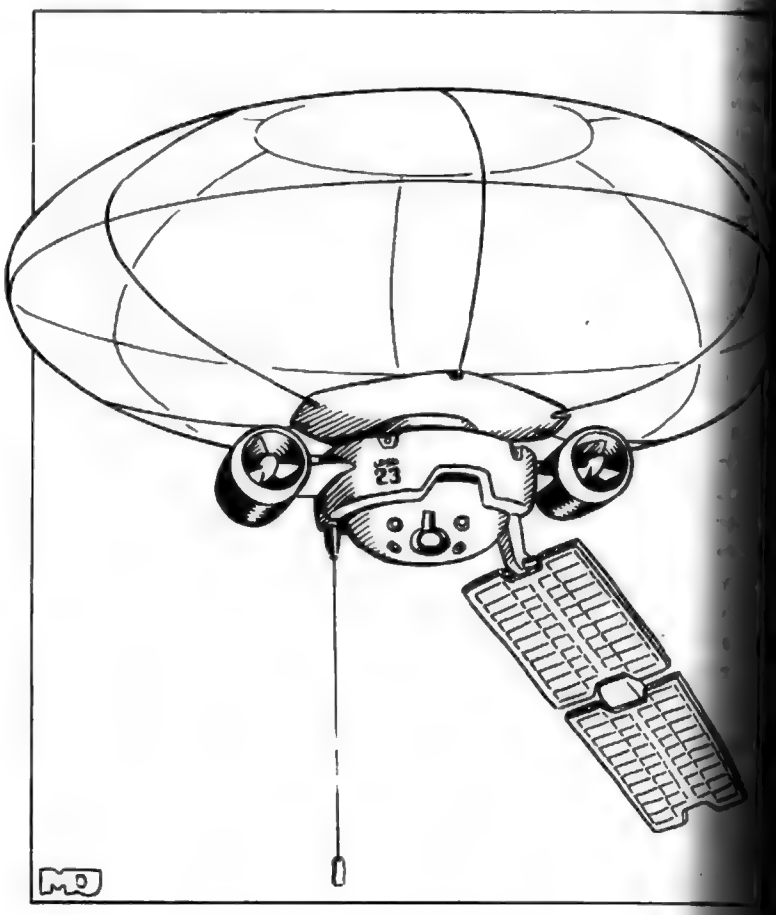
The "Redball Express" is a large drone designed for transporting supplies and equipment. Under contract to the CAS army, Aeroquip designed the Redball Express as a means of delivering ammunition, electronics and other supplies in small quantities to CAS special forces troopers deep behind enemy lines.

The Redball Express is an unmanned aerial vehicle with two tilt-wing jet engines. The tilt-wings allow it to perform standard take-offs from a friendly launch site (thus conserving fuel) and perform near-vertical landings in tactical areas, where landing space is at a premium.

AERODESIGN SYSTEMS CONDOR LDSD-23 & CONDOR II LDSD-41

The Condor and Condor II are state-of-the-art, lighter-than-air drones that are the unquestioned leaders in the field of reconnaissance, electronic intelligence-gathering (ELINT) and electronic warfare. Constructed entirely of sensor-transparent and near-light-transparent materials, Condors are almost impossible to detect.

The Condor LDSD-23 is a solar-powered drone filled with hydrogen for greater lifting capacity. For night-time operations, the drone features long-life rechargeable batteries that can keep the drone running for eight to twelve hours. The Condor also features nonmetallic electrical conductors to help reduce its radar



REDBALL EXPRESS

Handling	Speed	Accel.	B/A
4	300	35	3/0
Signature	**Pilot**	**Sensor**	**Cost**
5	2	3	25,000¥

Seating: None
Entry Points: 1 trunk door
Cargo: 16 CF
Load: 150 kg
Fuel: Jet (250 liters)
Economy: 0.25 km/liter (Idle: 5 minutes/liter)
L/T Profile: VTOL
Setup/Breakdown Time: None
Other Features: Remote control interface, rigger adaptation

signature, as well as solar-electric ducted turboprops for propulsion.

The Condor II uses the popular SHAPELY (SHAped Airfoil Positive Enhanced Lift) equipment for enhanced lift, which further reduces the drone's fuel consumption. The Condor II also replaces the original Condor's solar cells with extended-duration batteries.

CONDOR

CONDOR LDSD-23

Handling	Speed	Accel.	B/A
4	60	3	2/0
Signature	**Pilot**	**Sensor**	**Cost**
10	1	1	3,325¥

CONDOR II LDSD-41

Handling	Speed	Accel.	B/A
4	90	5	2/3
Signature	**Pilot**	**Sensor**	**Cost**
10	3	1	36,000¥

Seating: None
Entry Points: NA
Cargo: 1 CF (Condor)/3 CF (Condor II)
Load: 50 kg
Fuel: Electric (25 PF)
Economy: 5 km/PF (Idle: 2 hours/PF)
L/T Profile: VTOL
Setup/Breakdown Time: 3 minutes (Condor)/5 minutes (Condor II)
Other Features: Remote control interface, rigger adaptation (both models). The Condor LDSD-23 also has SunCell™ solar generators, which reduces its Economy to 0 on sunny days.

ARES ARMS SENTRY II

An improved version of the original Sentry system, the Sentry II incorporates the latest in drone technology advances. Features include an MSST transceiver, which allows the Sentry II to interface with any remote control network. Additionally, the system's remote control adaptor enables the Sentry II to take advantage of BattleTac IVIS, which can multiply the firepower of the system when more than one Sentry II system is used.

Game Effects

The Sentry II is a portable automated weapons stand that behaves like a drone. Because it is immobile, the Sentry II "drone" has a Speed of 0 and uses standard combat rules rather than vehicle combat rules.

AZTECHNOLOGY HEDGEHOG SIGNAL INTERCEPTOR

The Hedgehog signal interceptor drone is a signal-intercept and precision-emitter location system that intercepts and identifies opposing command, control, communications and intelligence (C^3I) transmitters. Leap-ahead technology exploits communications intelligence and signal intelligence to provide the user with vital electronic information about his opponent. In addition, the low profile offered by the small drone allows deep penetration into otherwise secure areas.

Game Effects

The ability to intercept enemy voice and data transmissions via electronic intelligence, or ELINT, during a pre-run recon and real-time during ops can give the rigger and his team a significant advantage over the opposition.

Exploiting signal intelligence can tell you if your enemy is using encryption, what kind of protocols they use for data transmissions, signal strength and so on. If signal intelligence is handled correctly, a rigger can determine the location of the other side's central command center, the kind of sensor systems they are using, where they do and do not scan frequently, whether they use drones and CCSS and so on.

SENTRY II

Handling	Speed	Accel.	B/A
3	0	0	2/0
Signature	**Pilot**	**Sensor**	**Cost**
4	4	4	30,000¥

Seating: None
Entry Points: NA
Cargo: 1 CF
Load: 250 kg
Fuel: Electric (12 PF)
Economy: NA (Idle Economy 1 hour/PF)
L/T Profile: NA
Setup/Breakdown Time: 2 minutes
Other Features: Micro-turret with anti-aircraft capability (weapon not included), remote control interface, rigger adaptation

HEDGEHOG

Handling	Speed	Accel.	B/A
4/4	15	3	1/0
Signature	**Pilot**	**Sensor**	**Cost**
8	1	4	55,000¥

Seating: None
Entry Points: NA
Cargo: 0 CF
Load: 15 kg
Fuel: Electric (180 PF)
Economy: 0.75 km/PF (Idle: 2 minutes/PF)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Remote control interface, rigger adaptation, Rigger Decryption Unit (4), Rigger Protocol Emulation Module (4)

AZTECHNOLOGY GCR-23C CRAWLER

A tracked drone based on a chassis the size of a large bread box, the Crawler is designed to operate as a remote snooper in rough and urban terrain. Though slow moving, it is capable of negotiating slopes of angles up to 45 degrees and has a special stair-climbing mode. Fully electric powered, it can operate in mobile mode for four hours on a standard charge and will plug itself into any power source at the designated surveillance site. When the drone is in stationary mode, its sensors can operate for 24 hours on a full charge. A standard sensor package is included in the purchase price.

IWS DLK MK 6 UTILITY MACHINE

The Integrated Weapon Systems (IWS) DLK Mk 6 is a remarkably versatile multi-purpose drone used for maintenance, repair, work floor delivery and other menial support functions in industrial applications, particularly applications in environments hazardous to normal metahuman workers. The DLK's most noteworthy feature is its two mechanical limbs that end in the drone's distinctive "claw-and-suction cup" design. The claw uses the utilitarian starfish design and is rated for lifting weights up to 75 kilograms. The suction cup is actually a modular receptacle for a number of different fittings and can also function as a data transport. This modularity makes the DLK Mk 6 a common sight throughout factories in the United Kingdom.

CRAWLER

Handling	Speed	Accel.	B/A
4/4	15	3	1/0
Signature	**Pilot**	**Sensor**	**Cost**
8	1	1	1,050¥

Seating: None
Entry Points: NA
Cargo: 0.5 CF
Load: 15 kg
Fuel: Electric (180 PF)
Economy: 0.75 km/PF (Idle: 2 minutes/PF)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Remote control interface, rigger adaptation

DLK MK 6 UTILITY MACHINE

Handling	Speed	Accel.	B/A
4/4	35	3	2/0
Signature	**Pilot**	**Sensor**	**Cost**
4	2	3	10,000¥

ARMED VARIANT

Handling	Speed	Accel.	B/A
4/4	35	3	2/6
Signature	**Pilot**	**Sensor**	**Cost**
4	2	3	51,000¥

Seating: None
Entry Points: NA
Cargo: 1 CF
Load: 1,000 kg (880 for armed variant)
Fuel: Electric (100 PF)
Economy: 0.75 km/PF (Idle: 2 minutes/PF)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Mechanical arms, one w/articulated claw, one w/suction-cup modular tool socket; remote control interface, rigger adaptation

CITROËN BROUILLARD SMOKE GENERATOR

The Brouillard provides continuous, wide-area smoke coverage. Unlike the so-called vehicle smoke generator system offered by Ares Arms, the Brouillard uses an electric burner instead of a smoke-grenade dispenser, which enables the Brouillard to operate for up to an hour without refueling. Additionally, the generator includes a special infrared screening module, which dissipates graphite particles within the smoke, providing up to 5 minutes of infrared smoke screening.

Game Effects

When stationary, the Brouillard produces a cloud of smoke with a diameter of 150 meters and a height of 10 meters. When moving, the smoke billows from the generator in a conic dispersal pattern, forming a 100 by 250 by 10 meter trailing cloud. Anything inside the cloud is obscured by heavy smoke (use the Heavy Smoke Modifier on p. 89, **SRII,** for Perception Tests made to detect anything inside the cloud). When the infrared screening module is in use, treat the smoke as thermal smoke as well.

The smoke cloud lasts as long as the smoke generator has smoke fuel. Once the generator shuts off (whether from the operator switching it off or the generator running out of fuel), the cloud begins to dissipate, turning into a light smokescreen after

Combat Turns and dissipating completely after 8 Combat Turns. The smoke generator consumes fuel at a rate of four liters per minute for regular fog oil or two liters per minute for graphite infrared smoke.

BROUILLARD SMOKE GENERATOR

Handling	Speed	Accel.	B/A
4/4	50	5	2/0
Signature	**Pilot**	**Sensor**	**Cost**
4	1	1	12,500¥

Seating: None
Entry Points: NA
Cargo: 0 CF
Load: 250 kg
Fuel: Diesel (100 liters)
Economy: 1 km/liter (Idle: 1 hour/liter)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Remote control interface, rigger adaptation, smoke generator (250-liter fog oil tank, 60-liter graphite smoke tank)

CYBERSPACE DESIGNS WOLFHOUND ADVANCED RECONNAISSANCE AIRCRAFT

The company that brought you the Dalmatian reconnaissance unmanned aerial vehicle (UAV) now introduces its follow-up, the Wolfhound. Using recent developments in robotic learning technology, the Wolfhound employs an improved pilot system that can adapt its tactics to avoid detection. Additionally, the Wolfhound features improved aerodynamic streamlining and increased fuel capacity to provide longer flight time.

WOLFHOUND

Handling	Speed	Accel.	B/A
3	210	12	2/0
Signature	**Pilot**	**Sensor**	**Cost**
5	2	1	31,000¥

Seating: None
Entry Points: 1 trunk door
Cargo: 3 CF
Load: 80 kg
Fuel: Jet (250 liters)
Economy: 0.75 km/liter (Idle: 5 minutes/liter)
L/T Profile: VTOL
Setup/Breakdown Time: 5 minutes
Other Features: Remote control interface, rigger adaptation, Learning Pool 2 (for Avoid Detection)

FMC-STONEBROOKE TADS-SERIES DRONES

The TADS (target acquisition and designation system) series of drones use the recently released BattleTac FDDM firmware to identify and mark targets for other vehicles to engage. So far, FMC-Stonebrooke has produced two drone models under its TADS line: the TADS Firebird and TADS Salamander.

The TADS Firebird consists of a simple fixed-wing UAV chassis fitted with an advanced sensor package that includes a BattleTac FDDM plug-in accessory. The TADS Salamander consists of a rugged, compact tracked vehicle chassis fitted with sensors and target-designator firmware.

FMC-Stonebrooke plans to release a third TADS vehicle, the waterborne TADS Hydra, in the fourth quarter of 2058.

GTE-FORD RETRANS UNIT

Produced under a joint partnership between GTE Telecommunications and Ford Motor Company, the mobile retransmission unit (more commonly known as a "retrans unit")

FIREBIRD & SALAMANDER

FIREBIRD

Handling	Speed	Accel.	B/A
5	40/105	20	2/0
Signature	**Pilot**	**Sensor**	**Cost**
5	2	3	35,000¥

SALAMANDER

Handling	Speed	Accel.	B/A
4/4	60	6	1/0
Signature	**Pilot**	**Sensor**	**Cost**
5	2	3	11,500¥

	Firebird	Salamander
Seating:	None	None
Entry Points:	NA	NA
Cargo:	0 CF	0 CF
Load:	10 kg	10 kg
Fuel:	Jet (230 liters)	Gasoline (60 liters)
Economy:	1 km/liter (Idle: NA)	1.5 km/liter (Idle: 1 hour/liter)
L/T Profile:	STOL	NA
Setup and Breakdown Time:	5 minutes	None

Other Features: BattleTac FDDM, remote control interface, rigger adaptation

extends a remote control network's effective area. The retrans unit intercepts signals from the remote control deck and retransmits them on a separate frequency to other drones. By placing a retrans unit on the edge of a remote control deck's transmission range, the unit can effectively double the distance at which a drone can operate away from the remote control deck.

RETRANS UNIT

Handling	Speed	Accel.	B/A
4	40/105	15	2/0
Signature	**Pilot**	**Sensor**	**Cost**
6	2	1	30,000¥

Seating: None
Entry Points: None
Cargo: 5 CF
Load: 120 kg
Fuel: Jet (120 liters)
Economy: 1 km/liter (Idle: NA)
L/T Profile: Standard
Setup/Breakdown Time: 5 minutes
Other Features: Remote control interface, retrans unit (Flux Rating 3), rigger adaptation

Game Effects

The retrans unit is a communications drone that relays t missions from a remote control deck to drones outside the d transmission range and vice versa. To calculate the exte transmission range during normal operation, add the Flux R from the drone's retrans device to the Flux Rating of the re control deck, then consult the Flux Rating and Range Table, p

During electronic warfare, however, the Flux Ratings re separate. Do not add the Flux Rating of the retrans device t remote control deck's Flux when resolving MIJI attacks (see p. 69).

MCT-NISSAN ROTO-DRONE

While other manufacturers are producing expensive, devices, Mitsuhama and Nissan apparently have taken the direction with the roto-drone, eschewing flashy, complicated mos in favor of a "simpler-is-better" design. The drone's sta sensor suite, excellent handling and large fuel tank give it the satility and flexibility to handle any number of mis Additionally, the superior lift offered by its helicopter flight lation allows users to customize the drone for specific tasks.

ROTO-DRONE

Handling	Speed	Accel.	B/A
4	70	6	2/0
Signature	**Pilot**	**Sensor**	**Cost**
5	1	1	6,600¥

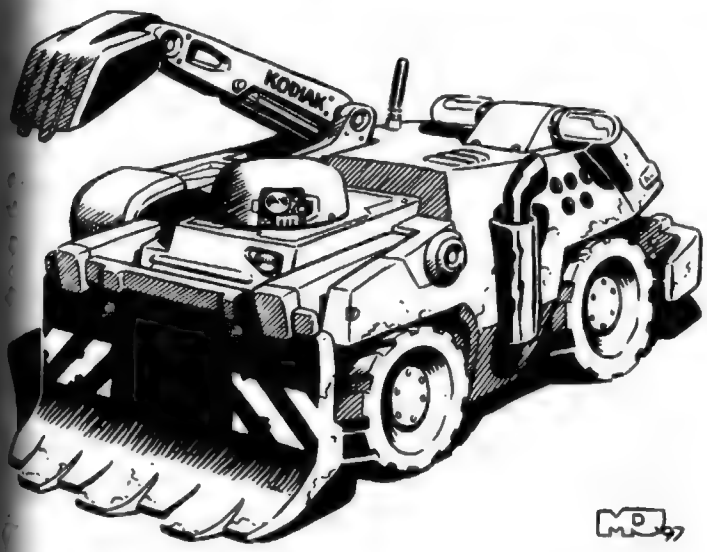
Seating: None
Entry Points: NA
Cargo: 4 CF
Load: 150 kg
Fuel: Jet (150 liters)
Economy: 0.25 km/liter (Idle: 5 minutes/liter)
L/T Profile: VTOL
Setup/Breakdown Time: 8 minutes
Other Features: Remote control interface, rigger adaptation

MESAMETRIC KODIAK ROADWAY CLEARANCE SY

Chartered last year in the Sioux Nation, the Mesametric pany makes its marketplace debut with the Kodiak, a heavy construction drone. Originally designed to perform m countermobility and survivability operations for Sioux Army bat engineers, the Kodiak is being offered for public sale t struction companies and government public works offices.

Game Effects

Among other creative uses players can think up, the bu er blade on the Kodiak may be used to break through barr clear paths through minefields. When doing so, treat the dr having effective Body and Armor Ratings of 6 and 18, respe ly, when resisting damage from breaking through walls or e



ing mines. Additionally, the barrier collapses when the Barrier Rating is less than half the Power of the collision, instead of twice the Power (per standard rules).

The mechanical shovel can dig a hole up to a half-meter wide, two meters long and one meter deep in a Combat Turn and can remove two cubic meters of dirt or debris per turn. Doing so forfeits all subsequent actions for the drone during the remainder of the Combat Turn.

KODIAK ROADWAY CLEARANCE SYSTEM

Handling	Speed	Accel.	B/A
4/4	30	2	4/12
Signature	**Pilot**	**Sensor**	**Cost**
2	2	3	40,000¥

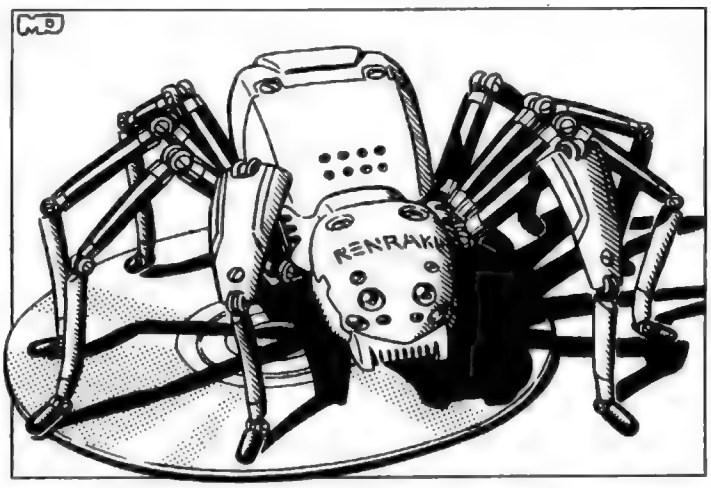
Seating: None
Entry Points: NA
Cargo: 0 CF
Load: 1,000 kg
Fuel: Diesel (100 liters)
Economy: 2 km/liter (Idle: 30 minutes/liter)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Bulldozer blade, excavating shovel, remote control interface, rigger adapatation

PRATT & WHITNEY SUNDOWNER AERIAL SPRAYER

The Sundowner is an unmanned aircraft equipped with a sprayer. Its simple chassis, combined with the sprayer, makes it appealing to agricultural businesses and corporate farms. The design gained notoriety recently when Ares Macrotechnology used several Sundowners to disperse the Strain III virus over the Chicago Containment Zone.

Game Effects

The Sundowner possesses a sprayer capable of delivering any liquid or gas in mist form. The sprayer can dispense a mist cloud 25 x 25 x 10 cubic meters in dimension. Doing so spends one Complex Action. Approximately one liter of liquid is needed to create a mist cloud.



RENRAKU ARACHNOID MINI-DRONE

Renraku's Arachnoid measures seventeen centimeters long. Useful for accessing extremely confined areas, the drone's spider-like chassis and extended-life rechargeable battery make it rugged and versatile enough to go anywhere. In response to recent advances by its competitors, Renraku has begun producing drones in additional insect shapes.

Game Effects

The Arachnoid has a Body Rating of 0, which means that any hit by any weapon of any size automatically destroys it. The Arachnoid's sensors have a fixed Flux Rating of 0.

ARACHNOID MINI-DRONE

Handling	Speed	Accel.	B/A
3/3	2	NA	0/0
Signature	**Pilot**	**Sensor**	**Cost**
16	1	1	5,000¥

Seating: None
Entry Points: NA
Cargo: 0 CF
Load: 0 kg
Fuel: 7 PF
Economy: 20 meters/PF (Idle: 25 hours/PF)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Remote control interface, rigger adaptation

SUNDOWNER

Handling	Speed	Accel.	B/A
4	40/105	15	2/0
Signature	**Pilot**	**Sensor**	**Cost**
6	2	1	15,500¥

Seating: None
Entry Points: NA
Cargo: 0 CF
Load: 120 kg
Fuel: Jet (120 liters)
Economy: 1 km/liter (Idle: NA)
L/T Profile: Standard
Setup/Breakdown Time: 5 minutes
Other Features: Remote control interface, rigger adaptation, sprayer w/50-liter tank

SAAB-THYSSEN BLOODHOUND

Jointly produced by Saab of Sweden and Thyssen Haneschel Motorwerk in Germany, the Bloodhound is a HAZMAT (hazardous materials) drone designed to identify, survey and mark areas contaminated by radiation, biological hazards or chemical contamination. Supplementing its superb sensor array are several sophisticated gas and chemical spectrometers.

The Bloodhound also contains a small storage area for collecting contamination samples and a simple sprayer for decontaminating itself and other small pieces of equipment.

Game Effects

The Bloodhound's sensor systems come with spectrometers and radiacmeters capable of detecting chemical/biological/radiation emissions, contaminations and anomalies. The Bloodhound's sensors have a fixed range of 10 meters.

BLOODHOUND

Handling	Speed	Accel.	B/A
3/3	90	6	1/0
Signature	**Pilot**	**Sensor**	**Cost**
5	2	4	10,000¥

Seating: None
Entry Points: 1 trunk door
Cargo: 1 CF
Load: 10 kg
Fuel: Gasoline (40 liters)
Economy: 4 km/liter (Idle: 1 hour/liter)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Amphibious operation (2), chemical/biological/radiation sensors, liquid sprayer w/10-liter tank, remote control interface, rigger adaptation

To detect the presence of specific chemicals, micro-bioforms or radiation, the controlling player makes a Sensor Perception Test. The target number is left up to the gamemaster, based on the type of material, its concentration, how unique it is and so on. Use the Knowledge Skill Table (p. 183, **SRII**) to determine the results of the test.

The Bloodhound's liquid sprayer can spray any liquid on the drone or another object within one meter of the Bloodhound. The sprayer has an internal storage capacity of 10 liters.

SHIAWASE KANMUSHI MECHANICAL CRAWLER

Shiawase enters the world of remotely controlled vehicles with the 10-centimeter Kanmushi ("Beetle") mechanical crawler. Taking advantage of "smart materials" technology, Shiawase breaks the "six-inch limit" that has long plagued manufacturers of small-scale drones. The Kanmushi represents a deliberate effort by Shiawase to appropriate the market currently dominated by Renraku, and that company confidently expects its drone to quickly supplant the Arachnoid as the preferred drone for penetrating closely confined areas.

Game Effects

The Kanmushi has a Body Rating of 0, which means that any hit by any weapon of any size automatically destroys it. The Kanmushi's sensors have a fixed Flux Rating of 0.

KANMUSHI MECHANICAL CRAWLER

Handling	Speed	Accel.	B/A
2/2	2	NA	0/0
Signature	**Pilot**	**Sensor**	**Cost**
16	1	1	30,000¥

Seating: None
Entry Points: NA
Cargo: 0 CF
Load: 0 kg
Fuel: 4 PF
Economy: 20 meters/PF (Idle: 25 hours/PF)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Remote control interface, rigger adaptation, smart materials

SIKORSKY-BELL MICROSKIMMER II

The Microskimmer II is a saucer-shaped air-cushion vehicle (ACV) drone, similar in size and shape to a standard trash can. The Microskimmer II addresses several design problems in the original Microskimmer, such as the original skimmer's tendency to sink when stationary over water. Additionally, the Microskimmer II incorporates several new features, such as limited vector-thrust flight capability, submerged operation mode and an expanded load capacity.

Game Effects

Because of its multi-role capability, the Microskimmer II uses two types of engines. When operating as a hovercraft or vector-thrust aircraft, the drone uses a methane combustion engine. When operating underwater, the drone uses an electric engine.

Because the Microskimmer has two engines, it also has two Signature, Economy and Fuel Ratings. The first set of ratings represents the methane engine. The second represents the electric engine.

The Microskimmer II has a maximum flight altitude of 1.5 meters. The limited thrust of its vector-thrust engines prevents it from flying any higher. The drone can operate underwater down to a maximum depth of 0.5 meters. Below 0.5 meters, however, the water pressure crushes its hull and the Microskimmer sinks.

MICROSKIMMER II

Handling	Speed	Accel.	B/A
3	90	6	1/0
Signature	**Pilot**	**Sensor**	**Cost**
7/5	1	1	5,500¥

Seating: None
Entry Points: NA
Cargo: 5 CF
Load: 50 kg
Fuel: Methane 150 bars/Electric 75 PF
Economy: 0.75 km/bar, 0.4 km/PF (Idle: 12 minutes/bar, 2 minutes/PF)
L/T Profile: VTOL
Setup/Breakdown Time: None
Other Features: Remote control interface, rigger adaptation

TOYOTA MK-GUYVER SEARCH AND RESCUE ROBOT

The MK-Guyver is the first drone to take advantage of new robotic self-learning technology. Its ability to adjust its programming in response to unexpected circumstances makes it a top-notch performer for search and rescue in perilous environments.

The MK-Guyver moves by means of tracks, but it also possesses auxiliary legs for movement over rough and uneven terrain. It has two mechanical arms with modular fittings and an acetylene blowtorch for cutting through rubble or barriers.

Game Effects

Because the MK-Guyver has two methods of movement, it has two Speed and Acceleration ratings. The first number indicates its Speed and Acceleration when using tracks. The second number indicates its ratings when using mechanical legs. Remember that a drone obeys standard combat rules instead of vehicle combat rules when propelled by mechanical legs (see **Mechanical Legs,** p. 35).

MK-GUYVER

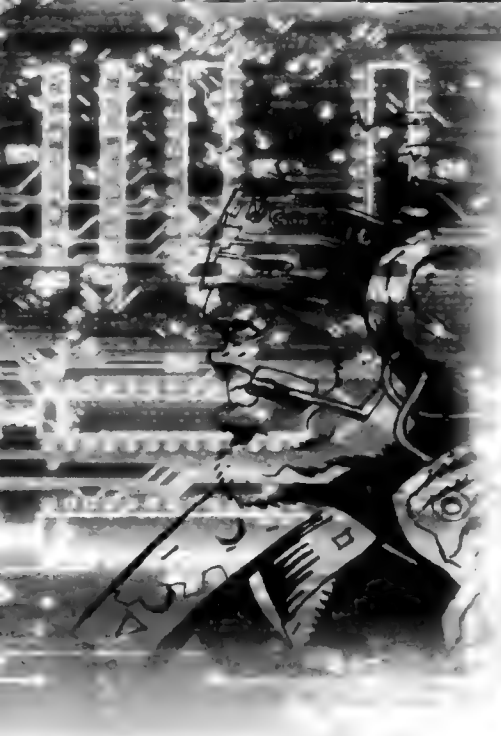
Handling	Speed	Accel.	B/A
3	20/5	4/NA	2/3
Signature	**Pilot**	**Sensor**	**Cost**
4	3	1	29,000¥

Seating: None
Entry Points: NA
Cargo: 5 CF
Load: 1,000 kg
Fuel: Diesel (20 liters)
Economy: 1/0.1 km/liter (Idle: 1 hour/liter)
L/T Profile: NA
Setup/Breakdown Time: None
Other Features: Learning Pool 2 (for Search and Rescue), mechanical arms (2), remote control interface, rigger adaptation

WEAPON RANGES TABLE

	Short (4)	Medium (5)	Long (6)	Extreme (9)
Victory/Vigilant Autocannons	0–100 m	101–500 m	501–2,500 m	2,501 m–5 km
Zapper	20–70 m	71–250 m	251–750 m	751–2,000 m
Jabberwocky	20–750 m	751 m–2 km	2 km–3.5 km	3.5 km–11 km

VEHICLE DESIGN & CUSTOMIZATION



Like a magician's spells, a rigger's vehicles and drones give the rigger power in the third millennium. And in the same way a custom spell can make a name for a magician, a unique vehicle can set a rigger apart from all other joystick jockeys.

This section provides rules for designing and modifying vehicles in **Shadowrun.** The first two subsections, **Vehicle Design** and **Vehicle Design Options,** cover the design of new vehicles. The third subsection, **Vehicle Customization,** covers the modification, upgrade and customization of existing production models.

The vehicle design and customization rules provided in this chapter supersede all previously published vehicle-construction rules. All vehicles that have appeared in previous **Shadowrun** publications have been re-constructed according to the new vehicle design system and their ratings recalculated accordingly. These revised ratings appear in the **Vehicle List** (p. 148). See **Converting Existing Vehicles** (p. 147) for guidelines on converting vehicle statistics from the old system to the current one.

VEHICLE DESIGN

Like a well-designed character, a well-designed vehicle demands some thought and creativity on the part of the player designing the machine. The point of vehicle design is not simply to cram the most armor, fastest engine and heaviest weapons into the cheapest vehicle frame. The point is to create a vehicle with special features and capabilities that best serve and enhance the character's own unique needs and personality.

The design process begins with the selection of a vehicle chassis and power plant, which together form the base for the vehicle's Design Point Value. The Design Point Value is the total sum of all the Design Points added to the vehicle. As additional improvements, enhancements, modifications and accessories are selected, more Design Points are added to the vehicle's Design Point Value. At the end of the process, the gamemaster multiplies the Design Point Value by the Mark-Up Factor to determine the final price of the vehicle.

The design process can be divided into the following steps:

1. Select a Chassis
2. Select a Power Plant
3. Add Design Options
4. Add Vehicle Modifications
5. Determine Final Vehicle Cost

EP 1: SELECT A CHASSIS

The chassis is a template that determines what type of vehi- is being constructed (bike, car, airplane and so on), as well as e vehicle's specific subtype (subcompact or sedan, ultralight or liner and so on).

Besides the vehicle type, the chassis selected determines the rting values for certain Vehicle Ratings, namely Handling, Body, rmor, Autonav or Pilot, Sensor and Cargo Factor (CF). The chas- also determines the starting seating arrangement, the arrange- nt of entry points, the set-up and breakdown time for drones, landing and takeoff profiles for aircraft, and any other acces- ries and options that are already available for the chassis. The assis Table (p. 169) lists the different types of chassis available d the starting Vehicle Ratings for each.

The Body Rating of a chassis is fixed; it cannot be improved reduced. Other Vehicle Ratings may be improved by adding sign options and vehicle modifications that enhance those rat- gs. Doing so increases the Design Point Value of the vehicle and bsequently increases the final price.

Ratings may also be decreased if the player or gamemaster sires. For example, a player may wish to decrease the Armor or Rating of his rigger's custom vehicle below the starting value order to create the fastest possible racing car. A player may also move standard chassis components such as doors or seats. owever, such "downgrades" do not decrease the Design Point lue or final price of the vehicle.

Chassis fall into one of eight categories, based on the Vehicle ll needed to operate them: bikes, cars, fixed-wing aircraft, hov- craft, motorboats/sailboats, rotor craft, vectored-thrust craft and ecial vehicles.

kes

Bikes include two, three, and certain four-wheeled open- pped vehicles that a driver operates by sitting on top of the hicle. Bikes cannot have Autonav Ratings greater than 2 unless ey are modified for rigger adaptation. Bikes are divided into the llowing subtypes.

Scooters: Scooters are short-range city commuter vehicles. ey do not offer spectacular performance, but they are fairly cheap.

Racing Bikes: Racing bikes are designed to achieve and sus- h high speeds.

Off-Road Bikes: Off-road motorcycles are designed for tra- rsing rough terrain and have better-than-standard off-road andling Ratings (at the expense of on-road Handling).

Choppers: Choppers are heavy motorcycles designed for g-distance cruising.

All-Terrain Vehicles: All-terrain vehicles (ATVs) are three- or ur-wheeled versions of the off-road bike. ATVs are easier to handle f-road, but they sacrifice on-road Handling Rating as well as speed.

ars

Cars include all manner of ground vehicles, including wheeled d tracked vehicles. Cars are divided into the following subtypes.

Commuters/Subcompacts: Subcompacts are small, inexpensive cars designed primarily for commuting within a city. Most are one- or two-seaters and have very little cargo space.

Sedans: Sedans are medium-sized, four-seat cars. This subtype includes everything from family Ford Americars to luxury Toyota Elites.

Sports Cars: These two-seat cars are designed for moving at extremely high speeds.

Limousines: Limousines are extended-length luxury cars, such as the Mitsubishi Nightsky, designed for carrying extra passengers, amenities and accessories.

Pickups: Pickups include light trucks that weigh less than 1.25 tons (1,250 kilograms), such as sport-utility vans, 4WDs, jeeps and Hummers.

Vans: Vans are trucks that weigh between 1.25 and 2.5 tons.

RVs: All-terrain recreational vehicles (RVs) weigh in between 1.25 and 2.5 tons and are designed for long-range travel. RVs come equipped with living and sleeping amenities as a standard option.

Sand Buggies: Sand buggies are light, open-air four-wheeled vehicles designed for off-road use. Although similar to ATVs in structure and design, sand buggies can carry more passengers (up to four) and more cargo. Most sand buggies use open tube-frame chassis, but they often carry attachable canvas or plastic overhead and side panels for protection against the elements.

Medium Transports: Medium transports are freight-haulers that weigh between 2.5 and 5 tons.

Heavy Transports: Heavy transports are heavy-duty freight trucks that weigh in at 5 to 10 tons.

Tractors: Tractors usually weigh as much as heavy transports but they have no internal cargo capacity. Tractors are designed to pull one or more trailers and can haul as much as 18 tons of cargo.

Armored Personnel Carriers (APCs): APCs are 15- to 30-ton armored ground vehicles designed for carrying troops into combat. (For an example of an APC, see the Devil Rat, p. 64 of **Fields of Fire.**) Though often mistaken for tanks, APCs are vulnerable to anti-vehicle missiles and can carry only the smallest of heavy weapons. APCs may use either tracks or wheels for propulsion.

Crawlers: Crawlers are unmanned drones designed for exclusive control by a remote control deck. Crawlers may move via tracks or wheels; few differences exist between the two types. All crawlers (and all drone chassis) come with a remote control interface and rigger adaptation as standard options.

Crawler chassis come in three sizes: micro, small and large. Micro-sized crawlers range in size anywhere from six to nine inches long and are light enough to be carried in the palm of a person's hand. Small crawlers may be as small as a toaster or as large as a large dog. Large crawlers are roughly comparable in size to a motorcycle or a human lying prone on the ground.

Remote Patrol Vehicles (RPVs): RPVs are armored ground drones, designed to patrol and defend an area against unwanted intruders. RPVs may be tracked or wheeled. Most are roughly the size of a large dog, though some are as large as an average human.

Fixed-Wing Aircraft

Fixed-wing aircraft are airborne vehicles that use aerodynamic lift (as opposed to directed air pressure or vectored thrust) to stay aloft. This category does not include helicopters, tilt-wing or jump-jet aircraft. Piloting a fixed-wing aircraft requires the Winged Planes Skill. Fixed-wing aircraft are divided into the following subtypes.

Ultralights: An ultralight is a very small, single-pilot aircraft. Although the term originally referred to open-air hang gliders powered by an internal-combustion engine, any single-passenger aircraft, regardless of structure, is considered an ultralight for design purposes.

Single-Engine Aircraft: A single-engine aircraft possesses only one propulsion engine (either propeller or turbine).

Twin-Engine Aircraft: A twin-engine aircraft is a middleweight airplane with two propulsion engines, either propeller or turbine. Examples include regional or commuter aircraft that fly between small airports and larger ones serving major airline companies.

Airliner: An airliner is a heavy-duty aircraft, such as those operated by major air carriers. Airliners are capable of transcontinental or even intercontinental flight and rely on two, three, four or occasionally five heavy propeller or turbofan engines.

Airliners fall short of high-speed civil transports (HSCTs) in terms of speed, range and capacity. However, standard riggers lack the skills and resources to design, modify or buy HSCTs and their larger cousins, suborbitals and semiballistics.

Jet Fighters: Jet fighters are supersonic combat aircraft controlled by one or two pilots. Jet fighters have a lifting capability of several tons, most of which is used for carrying heavy bombs and long-range missiles. Jet fighters never carry more than the lightest armor, to preserve their maneuverability and ordnance-carrying capacity.

Fixed-Wing Unmanned Aerial Vehicles (UAVs): UAVs are drone aircraft. Fixed-wing UAVs come in three sizes: small, medium and large. Small fixed-wing UAVs are approximately the size of toy model aircraft. Medium-sized UAVs have fuselages comparable in size to a dwarf or a small human. Large UAVs have fuselages as big as trolls, and some of the larger ones can actually carry metahumans.

Hovercraft

Also referred to as air-cushion vehicles or ACVs, hovercraft float centimeters above the ground or water on a cushion of pressurized air . Maneuverable on both land and sea, they make excellent amphibious vehicles. However, ACVs are not seaworthy without modification and will sink if powered down over water. ACVs are divided into the following subtypes.

Small Hovercraft: Small hovercraft are roughly comparable in size to pickups or sport utility vans and are used primarily as recreation or pleasure craft.

Medium Hovercraft: Medium hovercraft are approximately as large as vans or lightweight medium transports. Medium hovercraft are used as amphibious recreation vehicles, light cargo and passenger carriers, and even security vehicles.

Heavy Hovercraft: Heavy hovercraft are comparable in size to medium or heavy transports and can haul large numbers of passengers or large freight loads. The Confederated States Marine Corps uses armored heavy hovercraft as rapid-assault and screening vehicles during amphibious combat operations.

Skimmers: Skimmers are drone hovercraft. They come in two sizes, small and large, which are comparable in size to small and large crawlers.

Motorboats/Sailboats

Though motorboats and sailboats require different skills to handle, both use similar hull designs and are thus grouped together for design purposes. The Motorboat/Sailboat category covers only those boats with an overall length of less than [illegible] feet (40 meters). Standard rigger characters lack the skills [illegible] resources to design, modify or buy larger boats and sh[illegible] Motorboats and sailboats are divided into the following subtyp[illegible]

Skiffs: A skiff is a small boat under 20 feet (6 meters) lon[illegible]

Water Scooters: Water scooters, sometimes called jet s[illegible] are waterborne versions of motorcycles. They are exclus[illegible] motor-powered for design purposes.

Speedboats: Speedboats are high-speed boats, such as [illegible] cigarette racing boat. Some not-so-powerful versions also e[illegible] for daytripping. Speedboats generally measure between 24 [illegible] 40 feet long.

Sport Cruisers: Sport cruisers are medium-sized boats, g[illegible] erally used as pleasure boats by the wealthy. Sport cruisers g[illegible] erally measure between 20 and 60 feet (4 and 20 meters) lon[illegible]

Yachts: Yachts are large boats with an overall length gre[illegible] than 60 feet (20 meters), but less than 120 feet (40 meters). M[illegible] of them are the toys of the well-to-do. All yachts come with b[illegible] living amenities.

Mini-subs: Mini-subs are submersible boats capable of t[illegible] eling underwater. They are 15 meters or less in length and [illegible] dive to a maximum depth of 450 feet (150 meters). Larger [illegible] deeper-diving submarines are beyond the scope of this sou[illegible] book and are not covered in these rules.

Rotor Craft

Rotor craft generate vertical lift by propelling air downw[illegible] creating a localized updraft that lifts the aircraft. This categ[illegible] includes helicopters and tilt-wing aircraft. Rotor craft are div[illegible] into the following subtypes.

Autogyros: Autogyros are single-passenger ultra-light [illegible] copters, such as the Ares Wasp or Yellowjacket. Though they [illegible] significant Body and Armor Ratings and engine performance, [illegible] are very versatile.

Utility Helicopters: Utility helicopters are medium-s[illegible] multipurpose helicopters, such as the Hughes WK-2 Stallion.

Cargo Helicopters: Cargo helicopters are large helicop[illegible] designed for carrying heavy loads. The Ares Dragon is one ex[illegible] ple of a cargo helicopter.

Tilt-Wing Airplanes: Tilt-wing airplanes are fixed-wing [illegible] craft that can alter the incidence of their wings and perform v[illegible] cal take-offs and landings. These craft have traveling ranges [illegible] parable to fixed-wing aircraft, yet they can hover and make v[illegible] cal landings like helicopters. Almost all tilt-wing airplanes are [illegible] peller-driven.

Attack Helicopters: Attack helicopters are one- or two-p[illegible] senger high-performance combat helicopters. Most militaries [illegible] attack helicopters as missile carriers for close-air support [illegible] longer-range deep-strike missions. Consequently, they tend to [illegible] lightly armored. Because they are so specialized, attack h[illegible] copters are rarely used for any other role.

Rotary Wing UAVs: Rotary wing UAVs are drone helicopt[illegible] They come in three sizes: small, medium and large. Small ro[illegible] UAVs measure between 8 to 14 inches long (many can even [illegible] held in the palm of one's hand). Medium and large versions [illegible] equal in size to fixed-wing UAVs.

Tilt-Wing UAVs: Tilt-wing UAVs are drone tilt-wing aircr[illegible] They come in two sizes, medium and large, which correspond [illegible] size to medium and large fixed-wing UAVs.

Vectored-Thrust Craft

Vectored-thrust craft use directed jets of turbojet and turbofan exhaust to generate force and overcome the pull of gravity. Vehicles that fall into this category include low-altitude vehicles (known commonly as "thunderbirds") and jump-jet fighters (such as the current AV-8 Harrier). Vectored-thrust craft are divided into the following subtypes.

Thunderbirds: Also known as low-altitude vehicles (LAVs) or "t-birds," thunderbirds have no wings and rely entirely on jet propulsion to provide lift and thrust. Without adequate power, t-birds become flying (or more precisely, *falling*) bricks. Consequently, thunderbirds generally have short ranges and tremendous fuel requirements.

In most militaries, thunderbirds are used for short-range close air support, as well as armor support in terrain not suited to tank maneuvers. In these applications, t-birds are heavily armored and fitted with machine guns and assault cannons in place of rockets and missiles.

Jump-Jet Fighters: Jump-jet fighters are similar to standard fixed-wing jet fighters but have additional vertical vents for vertical landings and takeoffs and hovering. (To date, the Federated Boeing Eagle is the only published **Shadowrun** vehicle that fits this description.)

Vectored-Thrust UAVs: Vectored-thrust UAVs are drone t-birds. They come in three sizes: small, medium and large. These sizes correspond to the sizes of fixed-wing UAVs.

Special Vehicles

Special vehicles are vehicles that do not fit into existing vehicle categories. Controlling special vehicles normally requires a Special Skill, but in most cases a character can default to a relevant Vehicle Skill with a +2 target modifier (+1 if the character is a rigger and the vehicle is rigged). Special vehicles are divided into the following subtypes.

Zeppelins: More commonly known as "blimps," zeppelins are rigid-structure, lighter-than-air (LTA) dirigibles that use helium to provide lift. Zeppelins are huge but fairly easy to bring down. Jet propeller engines propel most zeppelins, though some have been outfitted with turbojets.

Mini-Blimps: Mini-blimps are miniature zeppelins. Their capability for hovering indefinitely makes them especially well-suited for reconnaissance and wide-area surveillance.

Walkers: Walkers are drones that use robotic legs for propulsion. (Legs can provide a distinct advantage over wheels or tracks when crossing difficult terrain.) Walkers come in three sizes—micro, small and large—which correspond to crawler sizes.

Anthroforms: Anthroforms are specialized walker drones with metahuman-shaped bodies. They can perform nearly any physical task a metahuman can, and can do it with greater strength, speed and agility than even a cybered metahuman. However, anthroforms lack the intelligence, breadth of experience and creative adaptation that metahumanity possesses, which is why anthroforms have not replaced metahuman workers except in high-risk hazard areas, such as nuclear power plants and ultra-heavy industrial work areas.

Inspired by some of the adventures of Allied forces in Operation Desert Storm, Steffi wants to re-create the tactical beach buggy used by some of the U.S. light infantry and special forces in that campaign. Steffi decides to call this armed dune buggy the Lockheed-Chenowth Light Strike Vehicle, a product created in joint partnership between the defense giant Lockheed and the British corporation Chenowth.

Scanning through the Chassis Table (p. 169), Steffi finds the perfect chassis: the Sand Buggy. The Sand Buggy has the following stats: Handling 4/4, Body 3, Armor 0, Cargo 4 (with a maximum of 15), Autonav 0, and Sensor 0. It starts with four bucket seats, two in the front and two in the back, and is an open-entry vehicle. This chassis is worth 20 Design Points, so the Design Point Value for Steffi's new vehicle starts out at 20.

Rich, on the other hand, is a racing fan and wants his rigger, named the Bratly Kid, to own a Formula One race car. The Bratly Kid is determined to own the most amazing car in the sprawl. (Hey, it takes all kinds.) The BK also recently grabbed the brass ring—he got an honest-to-Dunkelzahn big payday! Nuyen is not an object, and so Rich can modify his rigger's vehicle to his heart's content.

Looking through the chassis list, the closest thing Rich can find to a Formula One car is the Sports Car chassis. The Sports Car comes with two bucket seats and two doors. Because Formula One racing cars have only one seat and no doors, Rich decides to remove the doors and the extra seat. However, he still has to pay the full number of Design Points for the chassis.

Rich looks up Sports Car in the Chassis Table and finds that the vehicle has the following stats: Handling 4/8, Body 3, Armor 0, Cargo 3 (with a Maximum of 18), Autonav 0 and Sensor 0. In addition to its two bucket seats and two doors, it also allows top entry. Rich only wants the top entry. The Design Point Value for a sports car is 110, and so Rich begins vehicle construction at that amount.

2. SELECT POWER PLANT

A vehicle's power plant provides power to move the vehicle and operate its accessories and modifications. The type of power plant selected determines the starting and maximum values of the vehicle's Speed, Acceleration, Load and Economy Ratings, as well as the vehicle's initial Signature Rating and fuel tank size.

The Power Plant Table (p. 167) lists the different power plants available, the chassis that may use each type of power plant, and the starting and maximum values conferred by each power plant. If a chassis type is not listed under a particular power plant, the vehicle may not use that power plant.

All templates begin with the vehicle's Speed and Load at the base minimum rating. Either rating may be increased with the addition of extra Design Points to the vehicle's Design Point Value (see **Add Design Options**). Players and gamemasters may also reduce ratings below their starting values if desired, but doing so will not decrease the Design Point Value of the vehicle.

Electric Motor

Direct-current, battery-powered electrical motors have high Signature Ratings because they generate little heat compared to other types of engines. However, their low power outputs produce low Speed and Load Ratings. The fuel consumption of electric motors is expressed as a Power Factor (PF).

Methane Engine

A methane engine is a combustion engine that uses methane gas instead of gasoline as its fuel. Methane burns cleaner than gasoline, which makes it a highly touted alternative in the NAN and other environmentally friendly countries. Methane engines provide lower overall performance and lower Signature Ratings than gasoline engines, but they also have far greater fuel capacities. The fuel consumption of methane engines is expressed in *bars* of air pressure. (For you technoheads out there, one bar is slightly less than the pressure of the atmosphere at sea level—14.5 psi or 10^5 newtons per square meter.)

Gasoline Engine

Even with the development of alternate fuel sources, petroleum-derived gasoline remains the primary fuel for most ground and water vehicles and some aircraft. Some countries (such as the NAN) and several metroplexes, however, may impose legal limits on the use of such vehicles within their respective jurisdictions for environmental reasons. The fuel consumption of gasoline engines is expressed in liters.

Diesel Engine

Diesel is another petroleum-based fuel used by many vehicles. Diesel has a lower flashpoint than gasoline, which tends to limit the Speed Ratings of diesel-powered vehicles, but diesel engines provide higher heat-conversion efficiency—which results in a higher Load capability—than gasoline engines. The fuel consumption of diesel engines is expressed in liters.

Jet Propeller Engine

Jet propeller aircraft use propellers to blow air over their wings, creating aerodynamic lift with forward thrust on the side. Propeller aircraft are slower than jets (props can't break the sound barrier, for instance), but they generally have higher Signatures, better fuel economy and lower price tags than jet turbine engines. Propeller engines consume jet fuel, which is measured in liters.

Tilt-wing aircraft are the only aircraft other than the Fixed-Wing Aircraft category that use jet propeller engines.

Jet Turbine Engine

Jet turbine engines include turbojets, turbofans, ramjets—just about anything short of a space rocket engine. Though more powerful than jet propeller engines, jet turbine engines have lower Signatures, consume more fuel and are expensive to build and maintain.

All rotor craft and vectored-thrust aircraft—except for tilt-wing designs—use jet turbine engines.

Sails

Sails harness the power of the wind and may be used with certain types of watercraft. Sailing is a tricky skill to master, however, so sailcraft generally underperform in comparison to their powered counterparts. However, sail-powered vessels have the highest Signature Ratings, as well as unlimited "fuel mileage"—as long as the wind is blowing, of course.

Steffi, deciding to keep things simple, determines that the Light Strike Vehicle will have a gasoline engine. Looking through the Power Plant Table (p. 167), Steffi finds the following entry for the Sand Buggy chassis under the Gasoline heading: Speed 90 (maximum 100), Acceleration 6, (maximum 10), Load 40 kg (maximum 160 kg), Signature 2, Economy 8 km/liter (maximum 12 km/liter) and Fuel 40 liters.

A gasoline engine for a sand buggy is worth 25 Design Points, which increases the Design Point Value for the new vehicle to 45 points.

Rich's choice is easy. Sports cars only come with gasoline engines. Under the Sports Car entry, Rich finds Speed 160 (maximum 270), Acceleration 10 (maximum18), Load 40 (Maximum 200), Signature 2, Economy 6 km/liter (maximum 10 km/liter) and Fuel 60 liters. The Design Point Value for a sports-car gasoline engine is 65, pushing Rich's Design Point cost to 175.

3. ADD DESIGN OPTIONS

Design options are improvements, enhancements and accessories added to the vehicle by the manufacturer during the engineering and manufacturing processes. Design options are also available to shadow mechanics on the street.

As a general rule, any feature or improvement that involves internal restructuring of the vehicle is considered a design option. Additionally, the gamemaster may re-designate any vehicle modification (see **Add Vehicle Modifications**, below) as a design option if he wants to limit or restrict his players' access to a modification.

Some design options consume cargo space or add weight to the vehicle. These factors are listed under CF Consumed and Load Reduction for each entry in **Design Options** and also under Design Specifications for each entry in **Vehicle Customization** (p. 118). If a vehicle incorporates an option that takes up CF or Load, reduce the appropriate rating by the amount of CF or Load consumed. No vehicle can carry more design options than its CF or Load Rating allows.

Steffi decides that her new Light Strike Vehicle should have a better off-road Handling Rating, so she decides to make a straight Handling improvement to the vehicle's off-road Handling Rating, reducing it from 4 to 3.

A straight Handling Improvement (p. 116) costs 25 points for every point subtracted from the vehicle's on-road or off-road Handling Rating. Therefore, the Handling reduction increases the Light Strike Vehicle's Design Point Value by 25 points, from 45 to 70.

Steffi also decides to increase the vehicle's Acceleration Rating from 6 to 8. Improving the Acceleration costs 25 Design Points per point of increase, so this 2-point increase adds 50 more Design Points to the strike vehicle's Design Point Value, raising it to 120 points.

Anticipating some of the modifications she's planning to incorporate into the vehicle, Steffi decides to increase the vehicle's Cargo and Load Ratings. She decides to add 2 CF to the Cargo Rating and 30 kg to the Load Rating for final ratings of Cargo 6 and Load 70. The associated Design Point costs for each option are 10 Design Points for the Cargo increase and 3 points for the Load increase. This increases the Design Point Value of the Light Strike Vehicle by 13 points, from 120 to 133.

Meahwhile, all Rich thinks about is speed, speed and more speed. First, Rich is going to break the bank and get himself a vehicle made with smart materials. This costs him 100 Design Points, but allows him to increase the vehicle's maximum Speed and Acceleration ratings by 15 percent (it also allows for an increase in Load, but Rich doesn't care about that).

The smart materials increase the racing car's maximum speed to 311 and bump up the maximum Acceleration to 21. For the record, the maximum Load Rating rises to 230. The Design Point Value has gone up to 275 points. The gamemaster also notes that the Mark-Up Factor multiplier has just increased by .5 and the car's Availability is 4.

Rich decides it's time to increase the Acceleration and the Speed. Both upgrades cost 2 Design Points per point of increase. Rich is going to max them both out, so he increases Acceleration by 11 points (from the standard Sports Car maximum of 10 to the new maximum of 21). This costs him a total of 22 Design Points (11 x 2). The Speed Rating increase goes from the standard maximum Speed of 160 to the new maximum Speed of 311, a total increase of 151 points. This upgrade costs Rich 302 Design Points (151 x 2). The total Design Points for both rating increases is 324, which brings Rich's revised Design Point Value up to 599.

Next, Rich decides to increase his Load Rating because some of the toys Rich wants will require more power from the engine. Each 10-kg increase in Load costs 1 Design Point. Rich decides to add more than he thinks he will need, because you never know what you may want to customize later. So Rich adds 100 kg to his car's Load Rating for a total of 140 kg (well below the maximum of 230). That increase costs him 10 Design Points, raising his vehicle's Design Point Value to 609.

Finally, Rich realizes that speed without good handling means he'll be driving a death trap. Rich wants to improve his on-road Handling (if he has to take this thing off-road, he's already lost the race). He improves the Handling to its maximum by reducing the standard Sports Car Handling Rating from 4 to 2. That improvement costs 25 points per point of reduction, for a total of 50 Design Points. Adding this to the Design Point Value, Rich gets a new total of 659.

4. ADD VEHICLE MODIFICATIONS

Unlike design options, vehicle modifications (*mods* for short) are enhancements and accessories that can be installed in a new vehicle by the manufacturer or added to an existing vehicle by a rigger or shadow mechanic as vehicle customizations (see **Vehicle Customization,** p. 118). Generally, vehicle mods installed during the design process have fewer restrictions than those added during vehicle customization, but they also cost more.

When installing a vehicle mod during vehicle design, remember to use its Design Point cost *only* when calculating the final cost of the vehicle. Do *not* use the modification's nuyen cost.

Some modifications consume cargo space or add weight to the vehicle. These factors are listed under CF Consumed and Load Reduction for each entry in **Design Options** and also under Design Specifications for each entry in **Vehicle Customization.** If a vehicle incorporates an option that takes up CF or Load, reduce the appropriate rating by the amount of CF or Load consumed. No vehicle can carry more modifications than its CF or Load Rating allows.

Now it's time to add all the neat toys and flashy features to the Light Strike Vehicle. First, Steffi decides that the buggy needs to have reinforced roll bars (p. 129, because soldiers tend to be rough on their equipment. Second, it will need a radio to keep in touch with headquarters, and installing a radio requires that the vehicle have an electronics port (p. 139). Last, the vehicle needs weapon mounts (it is a strike vehicle, after all). Steffi decides that a ring mount (p. 134) and a passenger-side pintle mount (p. 134) will do nicely.

Thumbing through Vehicle Customization (beginning on p. 118), Steffi looks up the modifications she wants and jots down the associated costs. Roll Bars: 0 Design Points, 0 CF, 0 kg Load. Electronics Port: 10 Design Points plus the radio's cost (we'll ignore the radio for now), 0.5 CF, 0 kg Load (actually the weight of the radio, but we'll also ignore that for now). Ring mount: 10 Design Points, 1 CF, 25 kg Load. Pintle mount: 1 Design Point, 0 CF, 0 kg Load. Total costs for all modifications: 21 Design Points, 1.5 CF (rounded up to 2) and 25 kg Load.

The CF and Load costs are subtracted from the vehicle's Cargo and Load Ratings respectively, so the Light Strike Vehicle now has a Cargo Rating of 4 and a

Load Rating of 45 kg. The 21 Design Points are added to the vehicle's Design Point Value, bringing the total up to 154 points.

Now let's see what Rich comes up with for modifications to his race car. He decides not to take the engine customization—it carries far too great a risk of engine failure for the benefits it provides and the amount it will cost him (and he's putting more than enough nuyen into this vehicle already). He does, however, choose nitrous oxide injectors for that quick burst of getaway speed. He also includes a datajack, rigger adaptation, basic sensors, a crash cage and some high-performance tires. Cost is not a problem for Rich; however, he may have trouble with load and space. Design Points, Cargo Factor and Load costs are as follows for the mods he's selected:

Rating 6 Nitrous Oxide Injectors: 330 Design Points (55 Design Points per rating point: 55 x 6 = 330), 1.5 CF and 15 kg Load.

Datajack Port: 25 Design Points, 10 kg Load.

Rigger Adapation: 35 Design Points.

Sensors, Level 2: 150 Design Points, 1 CF, 25 kg Load.

Crash Cage: 40 Design Points, 10 kg Load.

Rich adds up all his customizations. Total Design Points = 580, Total CF = 2.5 (his vehicle's maximum is 3), and Total Load = 90 (leaving 50 kg for future customization).

Rich's final Design Point Value for his Formula One car is 1,239. After finding that total, Rich calculates the cost of the high-performance tires. This cost, expressed in nuyen rather than Design Points, is 75¥ x Body (3) each, for a total of 900 nuyen. He's going to be paying a bundle for this vehicle.

The Wandjina, produced by Commonwealth Aerospace Systems of Australia, is a fixed-wing UAV designed to provide close air support to ground troops. For purposes of vehicle design, it uses the Fixed-Wing UAV chassis (in the Fixed Wing Aircraft category) and is a military-grade drone.

The base Mark-Up Factor for the Wandjina is 2.5. Because it is military grade, a Special Design modifier of 3 applies; multiplying the base Mark-Up Factor by 3 gives a total result of 7.5. Because the Wandjina is also a drone, this result is then multiplied by a second applicable Special Design modifier—0.1—for a final result of 0.75.

Some Mark-Up Factors, modifiers and multipliers are expressed as ranges of numbers (such as 1 to 2.5). In these cases the gamemaster may either roll dice to determine the exact value or simply select a value within the range.

Gamemasters have the final say on the Mark-Up Factors of vehicles and may increase or decrease Mark-Up Factors as they see fit. Also, gamemasters may round off the final nuyen cost of a vehicle to the nearest 500 or thousand to keep the math simple.

Satisfied with her vehicle's design, Steffi shows it to the gamemaster, Diane, who checks it over. Everything looks fine to her, so Diane computes the final vehicle cost.

The Light Strike Vehicle has a Car chassis, so the base Mark-Up Factor is 1. The vehicle has none of the special features or unusual equipment listed on the Mark-Up Factors Table, so none of those mark-up modifiers apply (lucky Steffi!). However, the weapon mounts

5. DETERMINE FINAL VEHICLE COST

After the gamemaster and/or player have finished designing the vehicle, the gamemaster multiplies the Design Point Value by the appropriate Mark-Up Factor to determine the final cost for the vehicle. He then multiplies that result by 100 to translate the cost from points into nuyen.

Mark-Up Factors are listed in the Mark-Up Factors Table. The Chassis Category lists the base Mark-Up Factor for various vehicle chassis. The Special Features/Unusual Equipment lists additional Mark-Up Modifiers conferred by unusual features (such as smart materials), unique designs or equipment for special purposes. Add these Mark-Up Modifiers to the base Mark-Up Factor.

The Special Designs section lists multipliers based on certain special design purposes. If any of these apply, multiply the total Mark-Up Factor by the appropriate multiplier. In some cases (such as a security-grade drone), two or more of these special-design multipliers may apply. If this is the case, multiply the Mark-Up Factor by the first multiplier and *then* multiply that result by the second multiplier. Do *not* add the two multipliers together!

MARK-UP FACTORS TABLE

Chassis Category	Mark-Up Factor
Bike	.5
Car	1
Fixed Wing Aircraft	2.5
Hovercraft	2.5
Motorboat/Sailboat	1
Rotor Craft	2.5
Vectored-Thrust Craft	2.5
Special Vehicles	1–2.5

Special Features/Unusual Equipment	Mark-Up Modifier
Smart Materials Used in Design	+.5
Ambulance or Medical Treatment Vehicle	+1
Specialized Non-Combat Vehicle (e.g. fire truck)	+.25–2.5
Unusual or Uncommon Accessories and Features	+.20–1.2

Special Designs	Secondary Multiplier
Luxury Vehicle	1.5–2.5
Security Grade	2.0–3.0
Military Grade	3.0–5.0
Drone	0.1

Steffi added classify the vehicle as either security-grade or military-grade. Because the vehicle is unarmored and sports relatively light weapons, Diane decides to call it a security grade vehicle and to apply the lowest possible security-grade multiplier, which is 2. 1 x 2 = 2, so the final Mark-Up Factor is 2.

Now Diane multiplies the strike vehicle's Design Point Value (154) by the Markup Factor. She gets a total of 308 (154 x 2 = 308). To find this cost in nuyen, she multiplies 308 by 100, for a total of 30,800 nuyen. Though Diane could leave this number as is, she decides to round it down to 30,500 nuyen.

The final stats for the Light Strike Vehicle are:

Handling	Speed	Acceleration	B/A
4/3	90	8	3/0

Signature	Pilot	Sensor
2	0	0

Cost: 30,500¥
Seating: 2 bucket + 2 bucket
Entry Points: Open
Cargo: 4 CF
Load: 45
Economy: 8 km/liter
Fuel: Gasoline (40 liters)
L/T Profile: NA
Other Features: Electronics Port, Pintle Mount, Ring Mount, Roll Bars

Now let's move on to Rich. Rich is pretty darn happy with his racing car, which he's named the Johnny Player Special. He thought about adding a fixed mount, but he didn't want the mark-up to go sky high ... plus, he can always add it as a customization later.

Rich's base Mark-Up Factor is also 1, because a Sports Car chassis definitely qualifies as a car. The smart materials add a .5 mark-up modifier, for a Mark-Up Factor of 1.5. Diane decides that none of the secondary multipliers apply to the Johnny Player Special—it's not a military or security vehicle, and the luxury classification really doesn't do it justice. Because a Formula One race car is still pretty unusual, however, she decides to modify the Mark-Up Factor by adding another 1.0, making the total modifier 2.5.

Next, Diane multiplies the car's Design Point Value (1,239) by the final Mark-Up Factor (2.5) for a total Design Point Value of 3,097.5. Multiplying this result by 100 to convert it into nuyen makes the final cost of the Johnny Player Special 309,750 nuyen. To simplify the math, Diane rounds this cost up to 310,000¥ and tosses in the high-performance tires for free (plus a keen car deodorizer). Diane and Rich then write down the final stats for the Johnny Player Special:

Handling	Speed	Acceleration	B/A
2/8	311	21	3/0

Signature	Pilot	Sensor
2	0	2

Cost: 310,000¥
Seating: 1 bucket
Entry Points: open
Cargo: .5 CF
Load: 50
Economy: 6 km/liter
Fuel: Gasoline (60 liters)
Other Features: Crash Cage, Datajack Port, Nitrous Oxide Injectors, Rigger Adaptation, Smart Materials

VEHICLE DESIGN OPTIONS

The design options in this section can only be selected during vehicle design. They are *not* available for vehicle customization. The description of each option explains the option's game effects and uses the following categories.

Design Cost: The option's design cost is expressed in Design Points. Some design options have a flat Design Point cost; otherwise, the cost of an option varies according to the selected level of improvement.

Maximum Rating or Improvement: This category lists the maximum rating or amount of improvement a vehicle can take in the design option.

CF Consumed: This number is the Cargo Factor that the design option takes up. Players and gamemasters should keep track of the total Cargo Rating of the vehicle during design to ensure that it does not exceed the maximum allowed for the chassis chosen. If the vehicle does not have enough CF in its Cargo Rating to accommodate the design option, it cannot accept the option. Note that installing options decreases the available cargo space for storing goodies such as personal gear, luggage, loot and dragon eggs.

Load Reduction: This listing is the number of kilograms from the vehicle's Load Rating that the design option takes up. Players and gamemasters should keep track of the total Load Rating of the vehicle during design, to ensure that it does not exceed the maximum allowed for the power plant chosen. If the vehicle does not have enough kilograms in its Load Rating to accommodate the design option, it cannot accept the option. Note that installing options decreases the available Load Rating for hauling personal gear, luggage, assorted loot and the like.

ACCELERATION INCREASE

This option improves a vehicle's Acceleration Rating. Acceleration may only be increased up to the listed maximum Acceleration Rating for a given power plant on the Power Plant Table, p. 167.

Design Cost: 2 points per +1 increase to Acceleration
Maximum Improvement: Power plant's listed maximum Acceleration
CF Consumed: 0
Load Reduction: 0 kg

DESIGN OPTIONS TABLE

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ADD STOL/VSTOL TO AIRCRAFT'S TAKEOFF/LANDING PROFILE

All fixed-wing aircraft chassis begin with a Standard takeoff and landing profile (see the Runway Distances Table, p. 36). However, players may add STOL or VSTOL capabilities to their fixed-wing aircraft. STOL costs 250 Design Points; VSTOL costs 400 Design Points. Changing an aircraft's takeoff/landing profile does not consume CF or reduce Load.

INCREASE FUEL TANK CAPACITY

The Design Point and CF costs of enlarging a vehicle's fuel tank vary according to the type of engine used in the vehicle. These costs are listed in the Fuel Tank Capacity Table. Increasing the size of the fuel tank does not reduce the vehicle's Load Rating.

HANDLING IMPROVEMENT

Vehicle Handling Ratings can be reduced at a cost of 25 Design Points per 1-point reduction. (Lowering a vehicle's Handling Rating improves the vehicle's handling.) A vehicle's Handling Rating cannot be reduced to less than half of the chassis' original Handling Rating (rounded up) listed on the Chassis Table (p. 169). For ground vehicles, Handling reductions must be applied to the vehicle's on-road or off-road Handling Rating, not both.

Design Cost: 25 points per –1 to Handling Rating
Maximum Improvement: 1/2 of template's original Handling (rounded up)
CF Consumed: 0
Load Reduction: 0 kg

HYDROFOIL CAPABILITY

Hydrofoil capability may be added to all motorboats (except for skiffs). When engaging hydrofoil capability, the boat elevates on three large "skis" that eliminate drag on the water, thus improving the craft's Speed, Acceleration and Signature.

When a boat's hydrofoil is engaged, the vehicle's Speed and Acceleration Ratings increase by 25 percent (to find the improved rating, multiply the original rating by 1.25, then round down to the nearest whole number). Additionally, the boat's Signature increases by 1. However, the boat's Handling Rating increases by 2 when the foils are down.

Design Cost: 50 points
Maximum Improvement: NA
CF Consumed: 8
Load Reduction: 0 kg

IMPROVED ECONOMY

The Economy of a vehicle may be improved at a cost of 5 Design Points for each 5-percent improvement (multiply the initial Economy Rating by 1.05 to determine a 5-percent increase). The Economy Rating may not be increased beyond the maximum Economy Rating listed in the Power Plant Table.

Design Cost: 5 points per 5-percent increase
Maximum Improvement: Maximum Economy for chassis
CF Consumed: 0
Load Reduction: 0 kg

INCREASED CARGO SPACE

The cargo capacity of a vehicle may be increased at a cost of 5 Design Points for every 1-point CF increase. Cargo space may not be increased beyond the maximum Cargo Rating for the chassis listed on the Chassis Table.

To ensure that a vehicle does not exceed its allowed Cargo Rating during vehicle design, players and gamemasters are advised to keep a tally of the vehicle's total Cargo Rating. Add the CF consumption of all design options and vehicle modifications selected, and subtract the total CF Consumed from the vehicle's Cargo Rating to determine the final Cargo Rating for the vehicle.

Design Cost: 5 points per +1 CF
Maximum Improvement: Maximum CF listed for chassis
CF Consumed: NA
Load Reduction: 0 kg

LIVING AMENITIES

Living amenities consist of folding bunks, portable toilets, mini-refrigerators and other features that enable one or more persons to live in the vehicle in relative comfort. Three levels of living amenities are available: basic, improved and high.

Basic living amenities include most of the living features of someone living a Low Lifestyle. Improved living amenities are more expensive and include living features from a Middle Lifestyle. High living amenities are the most expensive and are comparable to living a High Lifestyle.

FUEL TANK CAPACITY TABLE

Engine Type	Capacity Increase	Design Point Cost	CF Consumed
Electric	5 PF	2	None
Methane	5 bars	2	0.5 CF
Gas/Diesel	1 liter	2	1 CF/50 liters
Jet	10 liters	1	1 CF/50 liters

Living amenities require at least 200 CF of cargo space. Characters may use 160 CF of this cargo space for stowing gear or for extra passengers, but not for installing any additional vehicle modifications.

Design Cost:
- **Basic:** 40 points per passenger (including driver)
- **Improved:** 50 points, plus 40 points per passenger
- **High:** 100 points, plus 40 points per passenger

Maximum Rating: NA
CF Consumed: 200
Load Reduction: 100 kg

LOAD INCREASE

A vehicle's Load may be increased at a cost of 1 Design Point for each additional 10 kilograms of Load. A vehicle's Load may not be increased beyond the maximum Load Rating listed for the vehicle's power plant on the Power Plant Table (p. 167).

To ensure that a vehicle does not exceed its maximum Load Rating during vehicle design, players and gamemasters are advised to keep a tally of the vehicle's total Load Rating. Add the Load Reductions of all design options and vehicle modifications selected, and subtract the total Load Reduction from the vehicle's Load Rating to determine the final Load Rating for the vehicle.

Design Cost: 1 point per +10 kilograms to Load
Maximum Improvement: Power plant's listed maximum Load
CF Consumed: 0
Load Reduction: NA

MEDICAL-TREATMENT GEAR

Medical-treatment gear consists of advanced diagnostic electronics, pressurized oxygen tanks and breathing masks, an array of drugs more sophisticated than a standard medkit and all other related gear found in a paramedic ambulance.

A character with access to medical-treatment gear receives one additional die to her Biotech Skill when providing first aid (p. 115, **SRII**). Additionally, patients treated for Deadly damage with medical treatment gear during the first hour after injury gain an additional die on their Body Test for avoiding permanent damage (p. 113, **SRII**).

Medical gear with one-patient capacity also increases the vehicle's passenger seating capacity by 2.5 passengers. Gear with two-passenger capacity increases the vehicle's passenger seating capacity by 5 passengers, and so on. Normally, a paramedic occupies the extra passenger seat, but any character may occupy it.

Design Cost: 400 points, plus 80 points per patient
Maximum Rating: NA
CF Consumed: 225
Load Reduction: 500 kilograms

IMPROVE ROBOT'S LEARNING POOL

A robot's Learning Pool represents its ability to learn from its environment and adapt its methods to pursue its prime directive. (See **Robots,** p. 67, for more information.)

The gamemaster should set a robot's maximum Learning Pool and the design cost for increasing the pool based on the type of robot.

Design Cost: GM's discretion
Maximum Rating: GM's discretion
CF Consumed: 0
Load Reduction: 0 kilograms

SIGNATURE IMPROVEMENT

A vehicle's Signature may be improved by using alternative nonmetallic materials in the vehicle's chassis or hull or by redesigning the vehicle's structural profile to reduce its radar cross-section and exhaust emissions.

The gamemaster may set limits for Signature improvement, but as a general rule, 1 level of increase should be the maximum allowed for vehicles available to the general public. Security vehicles should be limited to no more than 2 levels of increase, and increases of 3 or more points should exist almost solely in the domain of military contractors.

Design Cost (Levels of Improvement): 4 x 200 points
Maximum Improvement: Gamemaster's discretion
CF Consumed: 0
Load Reduction: 0 kg

SMART MATERIALS

Smart materials are a revolutionary new state-of-the-art enhancement available only as a manufacturer's design option. Smart materials consist of layered piezoelectric compounds that bend and warp when a certain electrical voltage is applied (more cool techno jargon to toss around and impress your gaming mates).

If a vehicle is equipped with smart materials, reduce its Handling by 1 and add a +1 modifier whenever the vehicle makes a Stress Test (see **Stress**, p. 25).

Also, smart materials reduce a vehicle's weight and increase the vehicle's maximum Speed, Acceleration and Load Ratings by 15 percent. (Simply multiply the initial maximum from the Power Plant Table, p. 167, by 1.15 and round up to determine the new maximum.)

Note that smart materials do not automatically increase a vehicle's Speed, Acceleration and Load Ratings—instead, they raise the limits on those ratings. A player must pay for the Speed Increase, Acceleration Increase and Load Increase design options to actually increase the ratings.

Helicopters equipped with smart materials also increase their Signature by 1, because a smart-material drive shaft eliminates the rotor's mechanical actuators that cause the audible "eggbeater" noise and increase the radar cross section.

Smart materials cost 100 Design Points, raise the vehicle's Mark-Up Factor by 50 and increase by 4 the Availability of the vehicle.

Design Cost: 100 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

SPEED INCREASE

A vehicle's Speed Rating may be increased at the cost of 2 Design Points per 1-point rating increase. Note that a vehicle's Speed Rating may not be increased beyond the maximum Speed Rating listed on the Power Plant Table (p. 167).

The Stall Speeds of fixed-wing aircraft cannot be changed.

Design Cost: 2 points per +1 increase to Speed
Maximum Improvement: Power plant's listed maximum Speed
CF Consumed: 0
Load Reduction: 0 kg

STRUCTURAL AGILITY

This option is available only for vehicles that incorporate the drive-by-wire modification (see **Drive-by-Wire Systems**, p. 124). The computer controls of a drive-by-wire system allow designers to push the development envelope by creating vehicles so dynamically unstable that an unassisted (meta)human driver/pilot cannot control them. However, the digital-control software can make minute adjustments many times per microsecond, thus rendering the vehicle stable through the sheer quickness of the microtronics.

Each level of Structural Agility provides a +1 bonus to the character's Reaction Attribute when driving the vehicle. This Reaction bonus also applies to a rigger's Control Pool, so it effectively raises the Control Pool by 1 when the character is rigging the vehicle.

The maximum Structural Agility level equals the vehicle's Drive-by-Wire level.

A vehicle must be fitted with a drive-by-wire system during vehicle design to accommodate Structural Agility. This option cannot be added if the vehicle is fitted with a drive-by-wire system during vehicle customization. Additionally, increases to a vehicle's drive-by-wire system during vehicle customization do not increase the levels of Structural Agility it may accept.

Design Cost: 150 points per level (plus the Drive-by-Wire modification)
Maximum Rating: Number of levels purchased in the Drive-by-Wire modification
CF Consumed: 0
Load Reduction: 0 kg

VEHICLE CUSTOMIZATION

Vehicle customization may be performed after a vehicle has been designed and manufactured. Unlike design, customization requires a skilled mechanic and any required parts. That's right—no need for millions of nuyen or a team of overpaid engineers—just the right parts, the ingenious know-how of your friendly neighborhood shadow mechanic and a little bit of time is all it takes. During vehicle customization, the following types of modifications may be performed: engine, control systems and protective-systems modifications, Signature enhancers, weapon-mount modifications, electronic-systems modifications, and miscellaneous modfications/accessories.

To customize a vehicle, the character first has to procure the parts. The character can do this however he likes—through a fixer, contacts, favors and so on. Use the rules for obtaining equipment, including Availability and Street Index, published in **SRII** and the **Shadowrun Companion** to resolve parts searches.

After obtaining the required parts, the character (or his mechanic) must install the modification by making an Installation Test with an appropriate Build/Repair Skill (or skills). The required skill, Installation Test target number and required base time for each modification are listed in the modification's description. To find the actual time it takes to perform the modification, divide the listed base time by the number of successes generated on the Installation Test.

WORKING TIME

As stated in **The Mechanic Contact** (p. 19), mechanics gen erally work eight hours a day, five days a week—and they expec to be paid for it! Any more time spent during a work day or wor week is overtime and will be charged as such.

If a player character elects to perform a modification himself he must deal with a different set of restrictions—namely, th amount of time he can devote to the work.

As a rule of thumb (which gamemasters may alter), a charac ter can spend up to six hours a day working on a vehicle and sti have time available to meet with contacts, pursue legwork, pa bills and so on. Any more time spent on customization prevent the character from meeting social obligations (resulting in irat landlords, torqued-off friends and significant others, and uncoop erative contacts). In fact, if a character spends more than twelv hours performing customization, he cuts into his bodily suste nance time and faces the consequences of sleep deprivation, ma nutrition, lack of exercise and so on.

If using the training rules from the **Shadowrun Companio** keep in mind also that a training day consumes 4 hours a day t study. A character who tries to juggle training and customizatio has a lot of drek on his plate and will suffer the previously men tioned consequences.

WEIGHT AND SPACE RESTRICTIONS

Certain modifications consume cargo space or Load. Not onl does this cut into the amount of personnel or cargo a vehicle ca carry, but it also limits the modifications a vehicle can carry because the vehicle cannot exceed its Cargo or Load ratings.

If desired, riggers and their mechanics can scrape up some extra CF by using up the vehicle's "leg room" and utility space. A rigger can scrape up an extra 1.5 CF (rounded down) for every passenger seat squeezed into the vehicle this way.

However, scraping up extra CF in this manner means that equipment is shoved into areas normally reserved for elbow, le or head room. This makes the vehicle less comfortable and impos es an additional +3 modifier to all Damage Resistance Tests that the character must make to resist crash or collision damage. Furthermore, passengers must resist 4L Stun damage during every round of vehicle combat because they bump and slam into equipment during extreme maneuvering.

Finally, if and when a highway trooper pulls over a rigger for uh, flying too low through the local speed zone, the cop is much more likely to notice that the rigger's vehicle is "non-standard," and may ask some rather pointed questions (for example, "Do you understand your rights as I have read them to you?").

INCORPORATING MODIFICATIONS DURING VEHICLE DESIGN

Any of the listed modifications may be installed during the vehicle design process. In this case, no Installation Tests are required. The character simply pays the required Design Cost and reduces the vehicle's CF and Load by the CF and Load require ments listed in the modification descriptions.

MODIFICATIONS

The following modifications may be installed as customiza tions or during the vehicle-design process.

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Engine modifications affect the engine or motor of a vehicle.

Control-systems modifications affect the control, driving or piloting of a vehicle. These modifications include rigger adaptation, autonavs and drone pilots.

Protective-systems modifications affect the Armor Rating of a vehicle or otherwise enhance the protection of the vehicle or its passengers.

Signature enhancers improve the Signature Rating of a vehicle.

Weapon-mount modifications improve the vehicle's capacity for mounting weapons and weapon accessories. These modifications do not cover vehicle weapons, ammunition or ordnance.

Electronic-systems modifications include sensors, ECM, ECCM and other internal electronic systems that aid the vehicle.

Miscellaneous modifications/accessories include items such as bucket seats, anti-theft systems and other creature comforts for the metahuman driver of the mid-twenty-first century.

CUSTOMIZATION AND DESIGN SPECIFICATIONS

Each modification description includes **Customization Specifications** and **Design Specifications.** A modification's **Customization Specifications** apply when the mod is added as a customization after the vehicle has been manufactured. **Design Specifications** apply when the modification is incorporated during vehicle design.

Customization Specifications

Parts Cost: The nuyen cost of the parts required for the modification.

Parts Availability: The Availability Rating for the parts or equipment required for the modification.

Street Index: The Street Index for the parts or equipment required for the modification.

Maximum Improvement or Rating: The maximum amount of improvement or the highest rating level a vehicle can take in the modification. If the vehicle being customized received the modification during the design process, its existing modification levels count against the maximum.

Base Time: The base time, in hours, required to install the modification onto the vehicle. See **Working Time,** p. 118.

Skill: The relevant skill needed to install and repair the modification. Note that some modifications require more than one skill for successful installation or repair. If this is the case, the character must make successful Skill Tests in all listed skills to perform a successful installation or repair.

Target Number: The target number for the Installation Test.

Equipment Needed: Specifies the type of tools and working gear needed to perform the installation or repair: kit, shop or facility (see p. 244, **SRII**, for more information on working kits). Unless otherwise specified, the type of tools required are those for the skill listed under Skill.

CF Consumed: The amount of cargo space the modification occupies. Installing modifications may decrease the available cargo space for personal gear, luggage, loot and other goodies. If the vehicle does not have enough CF in its Cargo Rating to accommodate the modification, it cannot accept the modification.

Load Reduction: The number of kilograms from the vehicle's Load Rating that the modification consumes. Installing the modification may decrease the available Load Rating for hauling personal gear, luggage, loot and so on. If the vehicle does not have enough kilograms in its Load Rating to accommodate the modification, it cannot accept the modification.

Design Specifications

Design Cost: The modification's design cost is expressed in Design Points. Generally, the cost of a modification varies according to the selected level of improvement, but some modifications have a flat Design Point cost.

Maximum Rating or Improvement: This lists the maximum rating or amount of improvement a vehicle can take in the modification.

CF Consumed: This listing is the CF that the modification takes up. Players and gamemasters should keep track of the total Cargo Rating of the vehicle to ensure that it does not exceed the maximum for the chassis chosen. If the vehicle does not have enough CF in its Cargo Rating to accommodate the modification, it cannot accept the modification. Note that installing modifications may decrease available cargo space for storing goodies such as personal gear, luggage, loot and dragon eggs.

Load Reduction: This lists the number of kilograms from the vehicle's Load Rating that the modification takes up. Players and gamemasters should keep track of the total Load Rating of the vehicle to ensure that it does not exceed the maximum for the power plant chosen. If the vehicle does not have enough kilograms in its Load Rating to accommodate the modification, it cannot accept the modification. Installing modifications may decrease the available Load Rating for hauling personal gear, luggage, assorted loot and the like.

ENGINE MODIFICATIONS

Engine modifications affect a vehicle's power-producing ... tems. Some modifications improve the performance of the en... and enhance Speed, Acceleration or Load. Others provide ... ondary means of generating power to propel the vehicle.

Engine Customization

Engine customization involves a radical re-design of ... existing engine to perform at levels well beyond normal. En... customization enables a vehicle to exceed the standard maxim... Acceleration, Speed or Load Ratings for that particular typ... vehicle, but at the cost of bypassing numerous performance s... guards and thereby greatly increasing the risk of engine f... during operation.

Engine customization is usually a vehicle modification, ... gamemasters may also use it as a design option to reflect p... type models that have not yet been fully tested. During the v... cle design process, engine customization may increase a vehi... Speed Rating above the normal maximum specified on the Po... Plant Table (p. 167).

Engine customization is measured in levels. Each ... increases either the Speed Rating by 30, Acceleration by ... Load by (Body x 50) kilograms. Each rating must be raised s... rately—in other words, three separate customizations are nee... to increase a vehicle's Speed, Acceleration and Load all by ... increment (+30, +2 and + (Body x 50).

To determine the risk of a customized engine failing d... operation, the gamemaster makes a secret Build/Repair Test. ... target number equals the Installation Test target number m... plied by 2. If the engine customization is performed during ... vehicle design process, the gamemaster rolls 6 dice again... Target Number 6. If the test succeeds, the engine will not f... the secret test fails, roll 1D6 and divide the result by 2, roun... up. The result is the number of *permanent* Stress Points adde... the vehicle. These Stress Points cannot be reduced unless a f... ry-standard engine replaces the customized engine.

Design Specifications

Design Cost: For the first level of customization, multiply ... power plant's Design Point cost by 1.25 to determine the ... tomization cost. For each additional level, add another .5 to ... Design Point multiplier and repeat the calculation.

Maximum Improvement: The maximum improvement is e... the power plant's maximum Speed, Acceleration, or Load, ... plied by 1.75 and rounded up.

CF Consumed: 0

Load Reduction: 0 kg

Customization Specifications

Parts Cost: For the first level of customization, multiply the ... the original power plant by 1.25. For each additional level o... tomization, increase the multiplier by .15 and repeat the calcu...

Parts Availability: 8/14 days

Street Index: 2

Maximum Improvement: Multiply the vehicle's Speed by ... determine the new Speed maximum.

Base Time: 40 hours per level

Skill: Appropriate Vehicle B/R Skill

Target Number: For ground vehicles and watercraft, the target number equals the number of customization levels plus 3. For drones and hovercraft, the target number equals the number of customization levels plus 4. For aircraft, the target number equals the number of customization levels plus 5.
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

GridLink™ Power

The GridLink™ system provides power to electrical cars through magnetic induction coils buried a few inches under the pavement in cities. Low-friction runners along the vehicle's underbelly induce an electrical current from the magnetic field produced by the roadbed coils. This modification is available only to ground vehicles, not including drones.

Vehicles equipped with GridLink™ need not worry about power consumption while traveling in the better areas of a city (Security Rating B or higher), so long as they stay under the local speed limit. The GridLink™ system is designed to provide adequate power for vehicles at normal traffic speeds only. If vehicles exceed the speed limit, GridLink™ cannot provide enough induction power, and so the vehicle must rely on its own power source. Sometimes, especially in larger cities during rush hour, the GridLink™ power grid overloads and crashes, leaving many motorists stranded (or at least those who have not recharged their onboard vehicle batteries lately).

GridLink™ users must pay a monthly usage charge based on the general weight of their vehicles. For standard vehicles, this charge amounts to a number of nuyen per month equal to the vehicle's Body Rating, multiplied by 100. For motorcycles, the amount is the cycle's Body multiplied by 25. For trucks and tractors, the figure is the vehicle's Body multiplied by 250.

Design Specifications
Design Cost: 0 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 600¥
Parts Availability: 3/96 hours
Street Index: 1
Maximum Rating: NA
Base Time: 16 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 1
Load Reduction: 0 kg

Nitrous Oxide Injectors

Nitrous oxide injectors inject nitrous oxide into the air compressor of gasoline and diesel engines, providing a short boost to power output. During vehicle combat, a driver may attempt to use this device to assist in performing the Accelerating/Braking action. When making an Accelerating/Braking Success Test, the player rolls an additional number of dice equal to the level of the injector.

Additionally, the player may use the device to increase his vehicle's Speed to its standard Speed Rating multiplied by 2.5. However, the vehicle will decelerate by its Acceleration Rate each subsequent turn afterward, until the vehicle's speed falls below its standard Speed Rating.

Nitrous oxide injectors contain a number of "charges" equal to the injector's level per use (naturally, a driver can opt to use a lower rating to conserve charges). Charges are stored in a pressurized gas cylinder, which can hold up to 20 charges.

Design Specifications
Design Cost: 55 points per level
Maximum Rating: 6
CF Consumed: 1.5
Load Reduction: 15 kg

Customization Specifications
Parts Cost: 3,500¥ per level (Levels 1–3), 7,000¥ per level (Levels 4–5)
Parts Availability: 4/48 hours
Street Index: 1
Maximum Rating: 5
Base Time: (Level + 47) hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 2
Load Reduction: 15 kg

SunCell™ Power

The SunCell™ system consists of externally mounted solar cells that provide electrical power to the vehicle on a sunny day at a rate equal to the vehicle's Body multiplied by 25 PF per hour. The system's power output is reduced by half in cloudy weather and reduced to zero at night or in heavily overcast weather. Tractors using this modification must mount their SunCell™ panels on all trailers they are towing.

SunCell™ systems are compatible with electric-engine driven vehicles. The accessory is not available for motorcycles.

Design Specifications
Design Cost: 5 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 500¥
Parts Availability: 3/72 hours
Street Index: 1
Maximum Rating: NA
Base Time: 8 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle shop
CF Consumed: 1
Load Reduction: 0 kg

Turbocharging/Superconductive Drive

Turbocharging improves the speed and acceleration of a methane, gasoline or diesel engine by using a turbine to compress the air that enters the engine's carburetor. A similar modification, called a "superconductive drive," provides electric engines with the same performance boosts. For convenience, both modifications follow the same rules and are collectively referred to as "turbocharging."

Each level of turbocharging increases a vehicle's Speed by 15 and its Acceleration by 10, and reduces its Signature by 1. The Economy of the vehicle also decreases. To caculate the reduced Economy Rating, multiply the vehicle's initial Economy Rating by .95. If adding turbocharging during vehicle design, apply the multiplier to the vehicle's Economy Rating after Economy effects of all other design options have been applied.

Aircraft (except for electrically powered aircraft) cannot be turbocharged, as their engines incorporate turbocharging as standard equipment.

Design Specifications

Design Cost: For each improvement level, multiply the power plant's original Design Point cost by 1.75.
Maximum Improvement: To determine the new maximum, multiply the vehicle's original maximum Speed by 1.25, then round down. (Note: A vehicle's maximum Speed can always be improved by 1 level.)
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications

Parts Cost: Multiply the original vehicle's cost by 1.1 per level to determine the cost of the parts.
Parts Availability: 6/12 days
Street Index: 1.5
Maximum Improvement: Multiply the vehicle's Speed by 1.5 to calculate the new maximum Speed (Note: a vehicle's maximum Speed can always be improved by 1 level.)
Base Time: 8 hours per level
Skill: Appropriate Vehicle B/R Skill
Target Number: For ground vehicles and watercraft, the target number equals the number of customization levels plus 2. For drones and hovercraft, the target number equals the number of customization levels plus 3. For electrically powered aircraft, the target number equals the number of customization levels plus 4.
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

CONTROL SYSTEM MODIFICATIONS

Control-system modifications affect the operation or handling of the vehicle in one way or another. Some modifications enhance ease of control and thus reduce the vehicle's Handling Rating. Others, such as rigger adaptation or autonavigation systems, provide alternate or supplementary methods of controlling a vehicle.

Adjusted Controls

Standard manual vehicle controls (steering wheels, foot pedals, dashboards and so on) are arranged to accommodate humans, elves and orks.

Dwarfs and trolls, because of their unusual sizes, have difficulty using such controls. Dwarf legs are too short to reach foot pedals and most dashboard controls will be out of a dwarf's reach. Likewise, trolls attempting to drive will experience difficulty when attempting to manipulate standard-sized controls with their huge hands and feet. Adjusted controls are modified to fit the ergonomic needs of dwarfs and trolls and solve these problems.

If a dwarf or troll attempts to drive a vehicle with standard controls, he receives +3 target modifiers on all driving-related Success Tests. Likewise, if humans, elves or orks attempt to drive vehicles with adjusted controls, they receive +3 target modifiers on all driving-related Success Tests. Furthermore, dwarfs cannot drive vehicles with controls adjusted for trolls, and vice versa. Note that size does not matter when driving a rigged vehicle using a datajack.

Adjusted controls are also available for any metahumans with disabilities that prevent them from using standard controls.

Note that vehicles with adjusted controls may be harder to come by, more expensive or simply unavailable in areas unfriendly to metahumans.

Design Specifications

Design Cost:
Dwarf: 25 points
Troll: 35 points
Other: 30 points (normally not available as a design option)
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications

Parts Cost:
Dwarf: 2,500¥
Troll: 3,500¥
Other: 3,000¥
Parts Availability: 3/72 hours
Street Index: 1
Base Time: 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Autonavigation Systems

Autonavigation systems are available for most vehicles. The effects of each basic type of system—Rating 1, Rating 2 and Rating 3—are described in the following entries.

The Autonav Rating also represents extra dice the rigger can add to standard Driving Tests. In combat, however, the autonav system works against the character because its safety-conscious programming runs counter to vehicle combat. In this case, the system's rating is *added* to test target numbers. See the **The Driving Test** in **Standard Vehicle Operations** (p. 20) and the **Vehicle Combat** section for more information on these effects.

Rating 2, Rating 3 and Rating 4 autonav systems are also capable of controlling a vehicle without input from the driver. In these cases, assume that the vehicle has the appropriate Vehicle Control Skill at a rating equal to its Autonav Rating.

Rating 1 Autonav

Rating 1 autonav consists of rudimentary collision detection/avoidance systems. It comes with Level 0 Sensors, which consist primarily of ultrasound and basic radar systems that detect the presence of other objects. However, the Rating 1 autonav system cannot control a vehicle by itself.

Rating 1 autonav is the only type of autonav that can be fitted to a motorcycle that does not have rigger-control gear installed.

Design Specifications
Design Cost: 5 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

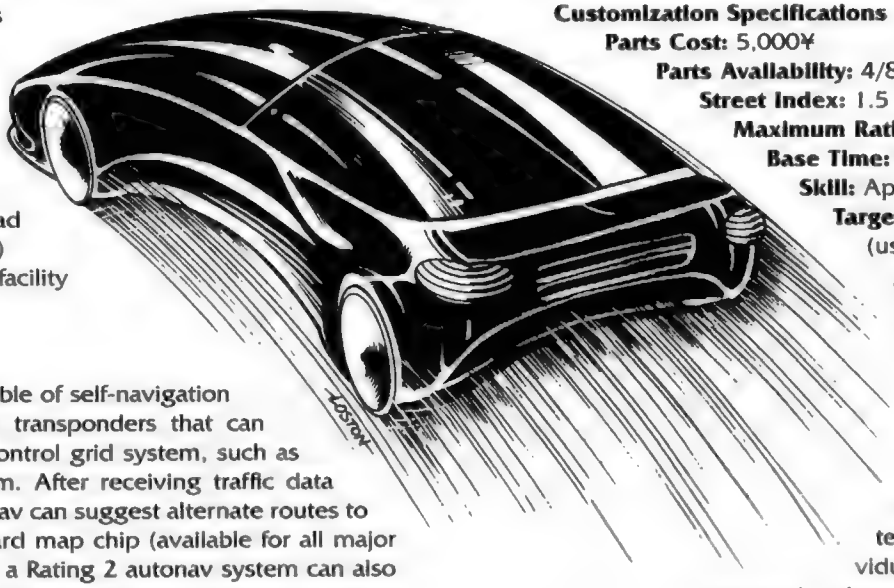
Customization Specifications
Parts Cost: 500¥
Parts Availability: 2/96 hours
Street Index: 1
Maximum Rating: NA
Base Time: 16 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 8 – Handling (use on-road Handling for ground vehicles)
Equipment Needed: Vehicle facility
CF Consumed: 0

Rating 2 Autonav

Rating 2 autonav is capable of self-navigation and is equipped with radio transponders that can communicate with a traffic-control grid system, such as the the European ALI system. After receiving traffic data from such systems, the autonav can suggest alternate routes to a destination. Using a standard map chip (available for all major urban areas, 25 nuyen each), a Rating 2 autonav system can also follow any route mapped out along terrain not classified as rough. Rough terrain (where off-road penalties apply) rapidly overwhelms the system's collision-avoidance software and all relevant target numbers are doubled.

Design Specifications
Design Cost: 10 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 1,000¥
Parts Availability: 3/6 days
Street Index: 1
Maximum Rating: NA
Base Time: 32 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 8 – Handling (use on-road Handling for ground vehicles)
Equipment Needed: Vehicle facility
CF Consumed: 0



Rating 3 Autonav

Rating 3 autonav can navigate rough terrain without difficulty, following a pre-programmed route. Geological-survey map chips may be used in conjunction with this system; these chips cost 50 nuyen each and cover an area between 100,000 and 200,000 square kilometers in size (roughly the size of an average UCAS or CAS state). Rating 3 autonav systems also incorporate NAVSTAR Global Positioning System (GPS) receivers as standard equipment (see p. 61, **Fields of Fire,** for more information about the GPS system).

Design Specifications
Design Cost: 50 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 5,000¥
Parts Availability: 4/8 days
Street Index: 1.5
Maximum Rating: NA
Base Time: 4 days
Skill: Appropriate Vehicle B/R Skill
Target Number: 8 – Handling (use on-road Handling for ground vehicles)
Equipment Needed: Vehicle facility
CF Consumed: 0

Rating 4 Autonav

Rating 4 autonav systems are the most sophisticated autonav systems available to private individuals. These systems can operate in urban and off-road terrain, as long as the appropriate map chips are provided (see **Rating 3 Autonav**). A Rating 4 system can plan its own route if given destination instructions and modify its programmed route to the next most appropriate route if local conditions make a course modification desirable.

Design Specifications
Design Cost: 150 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 15,000¥
Parts Availability: 6/14 days
Street Index: 2
Maximum Rating: NA
Base Time: 48 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 8 – Handling (use on-road Handling for ground vehicles)
Equipment Needed: Vehicle facility
CF Consumed: None

Contingency Maneuver Controls (CMCs)

Contingency maneuver controls (CMCs) consist of redundant wiring, secondary circuit breakers and backup systems. CMCs allow a vehicle to ignore, to a limited extent, the effects of vehicle damage on driving and control of the vehicle.

CMCs allow the vehicle to ignore the effects of a number of boxes of vehicle damage equal to the rating of the CMC system. For example, a vehicle with Rating 3 CMCs does not suffer any damage modifiers when taking Light or Moderate vehicle damage. Once the damage passes the Moderate level, however, all damage and Initiative modifiers apply per standard rules.

Note that even if a vehicle has Rating 9 CMCs, it will be destroyed when it suffers damage at the Deadly level. CMCs keep the vehicle running at peak performance instead of slowly degrading performance as damage accumulates, up until the point of destruction.

CMCs do not compensate for damage modifiers applied to riggers suffering from Physical or Mental Damage.

Design Specifications
Design Cost: 35 points per rating (Rating 1–3); 75 points per rating (Rating 4–6); 150 points per rating (Rating 7–9)
Maximum Rating: 9
CF Consumed: 0
Load Reduction: 25 kg

Customization Specifications
Parts Cost: 2,500¥ per rating (Rating 1–3); 5,000¥ per rating (Rating 4–6); 10,000¥ per rating (Rating 7–9)
Parts Availability: 6/14 days
Street Index: 2
Maximum Rating: 9
Base Time: 80 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 10 – Handling (use on-road Handling for ground vehicles)
Equipment Needed: Vehicle facility
CF Consumed: 2
Load Reduction: 30 kg

Datajack Port

A datajack port provides a rigger with direct control of a vehicle and also enables any individual equipped with a datajack to plug into the vehicle and control it with rudimentary cybernetic commands. However, increase a character's Reaction Rating by 1 when he controls the vehicle without rigger adaptation or vehicle control rig cyberware.

Vehicle control rig cyberware cannot properly interface with a simple datajack link. A full vehicle-control rig is required to receive the full Reaction and Initiative bonuses of the cyberware.

Design Specifications
Design Cost: 25 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 10 kg

Customization Specifications
Parts Cost: 2,500¥ (5,000¥ for motorcycles)
Availability: 3/72 hours
Street Index: 1.5
Maximum Rating: NA
Base Time: 56 hours (112 hours for motorcycles)
Skill: Appropriate Vehicle B/R Skill
Target Number: 4 (8 for motorcycles)
Equipment Needed: Vehicle facility
CF Consumed: 1
Load Reduction: 15 kg

Drive-by-Wire Systems

Drive-by-wire systems substitute advanced computer-controlled maneuvering systems for standard mechanical or basic electronic steering controls.

Drive-by-wire systems are available at levels 1, 2 and 3. Each level of drive-by-wire reduces a vehicle's Handling by 1. Additionally, the system reduces a vehicle's overall weight and provides a one-time increase to the vehicle's Acceleration, Speed and Load Ratings.

To calculate the one-time increase, multiply the desired rating by .10. If desired, the multiplier can be split among two or three ratings. For example, the player may increase the Acceleration, Speed and Load Ratings by the following amounts: Acceleration Rating x .03, Speed Rating x .03 and Load Rating x .04. Or the player may increase the Acceleration Rating by the drive-by-wire system's level multiplied by .06, and the Speed Rating by the system's level multiplied by .04.

The multiplier increase is *not* cumulative per level of drive-by-wire. A vehicle with a Rating 3 drive-by-wire system receives the same .10 multiplier as a vehicle with a Rating 1 drive-by-wire system.

To install a drive-by-wire system as a vehicle customization, the rigger or mechanic must make three separate successful tests: an appropriate Vehicle B/R (4) Test, a Computer (4) Test, and an Electronics (4) Test. Successes from all three tests may be used to reduce the base time for the modification.

Design Specifications
Design Cost: Multiply chassis' Design Point cost by 1.75 per level added
Maximum Improvement: –3 to Handling
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: Multiply the vehicle's original cost by 1.25 per level added
Parts Availability: 8/16 days
Street Index: 2.5
Maximum Improvement: –3 to Handling
Base Time: Body x 160 hours
Skill: Appropriate Vehicle B/R Skill, Computer, Electronics (see text)
Target Number: 10 – Handling (use on-road Handling for ground vehicles)
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Improved Control Surfaces (Watercraft Only)

Improved control surfaces improve the rudder and other control surfaces of watercraft. Each increment of improvement

reduces the boat's Handling by 1. This modification may not be used in conjunction with drive-by-wire systems.

During vehicle design, levels of improved control surfaces are not subject to the limit of the chassis' original Handling Rating. However, improved control surfaces may not reduce the boat's Handling by more than 2.

Design Specifications
Design Cost: Multiply the chassis' design point cost by 1.40 per increment added
Maximum Improvement: –2 to Handling
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: Multiply vehicle's original cost by 1.15 per increment added
Parts Availability: 6/12 days
Street Index: 2
Maximum Improvement: –2 to Handling
Base Time: Number of levels x 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Improved Suspension (Ground Vehicles Only)

This modification improves the physical suspension of wheeled ground vehicles. Each level of improvement reduces the vehicle's Handling by 1. Improved suspension improves on-road Handling except the case of motorcycles, where it improves on-road and off-road Handling equally. This modification may not be used in conjunction with drive-by-wire systems.

During vehicle design, levels of improved suspension are not subject to the limit of the original chassis' Handling Rating. However, the modification may not reduce the vehicle's Handling by more than 2.

Design Specifications
Design Cost: Multiply the chassis' Design Point cost by 1.25 per increment added
Maximum Improvement: –2 to Handling
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: Multiply the vehicle's original cost by 1.10 per increment added
Parts Availability: 6/12 days
Street Index: 2
Maximum Improvement: –2 to Handling
Base Time: Increment x 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Off-Road Suspension

Off-road suspension improves off-road Handling at the expense of on-road Handling, Speed and fuel consumption. This modification is available only to wheeled ground vehicles and is compatible with drive-by-wire systems.

Each level of off-road suspension reduces the vehicle's off-road Handling Rating by 1, while increasing the on-road Handling Rating by 1. The installation of off-road suspension, regardless of how many levels of improvement are made, reduces on-road Speed by 15 and off-road Speed by 30. It also increases the vehicle's Economy by a varying amount, depending on the type of vehicle (see Off-Road Suspension Table, below).

During vehicle design, levels of off-road suspension are not subject to the limit of the chassis' original Handling Rating. However, the modification cannot raise or lower the vehicle's ratings by more than 2.

Off-road handling is compatible with the improved-suspension modification.

Design Specifications
Design Cost: Multiply the chassis' Design Point cost by 1.50 per 1-point change to Handling Rating.
Maximum Improvement: +2/–2 to Handling
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost:

Cars (except Medium/Heavy Transports and Tractors): Multiply the original vehicle cost by 1.35 for every 1-point change to Handling Rating.

Bikes: Multiply the original vehicle cost by 1.2 for every 1-point change to Handling Rating.

Medium/Heavy Transports and Tractors: Multiply the original vehicle cost by 1.50 for every 1-point change to Handling Rating.

Parts Availability: 6/12 days
Street Index: 2
Maximum Improvement: +2/–2 Handling
Base Time: Increment x 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Remote-Control Interfaces

The remote-control interface enables a vehicle to receive and transmit data from and to a remote-control network so that a rig-

OFF-ROAD SUSPENSION TABLE

Vehicle	Economy Change Multiplier
Cars, Vans, Pickups, Light Trucks	1.15
Motorcycles	1.30
Transports	1.40

ger can control the vehicle via the network. The remote-control interface also gives the vehicle a Pilot Rating that reflects the vehicle's level of semi-autonomy. This modification does not apply to standard drones, which are automatically equipped with remote-control hardware and software. Vehicles adapted for remote control start with an initial Pilot Rating 1.

Design Specifications
Design Cost: (25 x Body) points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 2,500¥ x Body
Parts Availability: 4/72 days
Street Index: 2
Maximum Rating: NA
Base Time: 16 hours
Skill: Appropriate Vehicle B/R Skill, Electronics B/R
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Remote Pilot Advanced Programming

The advanced programming option is required if the character desires a Pilot Rating greater than 1.

A Level 1 Pilot is a simple system that does exactly what it's told and is easily confused.

A Level 2 Pilot is an enhanced system with limited autonomy and the ability to interpret commands with slight latitude. Level 2 Pilot programming is the highest-level pilot system that the public can buy without a security license.

A Level 3 Pilot is an advanced system and possesses roughly the same intelligence and comprehension level as an average metahuman. Level 3 Pilots are generally found on the gray or shadow markets.

Level 4 Pilot systems are security-grade drone pilots. Level 4 systems employ sophisticated expert systems and fuzzy-logic controls that give a drone the equivalent tactical intelligence of a well-trained company man.

Level 5 Pilots are military-grade drone pilots. Possessing the latest advances in expert systems, fuzzy logic and neural-network pattern recognition, Level 5 Pilots are the equal of battle-savvy soldiers or pilots who've logged more than a thousand hours of flight duty. Level 5 is also the highest known Pilot level in production (rumors abound of Level 6 or higher Pilots that employ proto-artificial intelligence, but no proof—definitive or circumstantial—exists to back up these rumors).

Design Specifications
Design Cost:
Pilot 1: 0 points (default rating)
Pilot 2: 50 points
Pilot 3: 250 points
Pilot 4: 1,250 points
Pilot 5: 5,000 points
Maximum Rating: Pilot 5
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost:
Level 1: 0¥ (default)
Level 2: 5,000¥
Level 3: 25,000¥
Level 4: 500,000¥
Level 5: 2,500,000¥
Parts Availability: 6/14 days (Levels 2–3), 10/35 days (Level 4), 14/70 days (Level 5)
Street Index: 2 (Levels 2–3), 4 (Level 4), NA (Level 5)
Maximum Rating: Pilot 5
Base Time: 64 hours
Skill: Computer B/R
Target Number: 8 – Handling (use on-road Handling for ground vehicles)
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Rigger Adaptation

Rigger adaptation consists of a "black box" that translates machine code into neurological stimuli and vice versa. In addition to the rigger adaptation gear, the vehicle must be equipped with a datajack link or remote-control adaptation and sensors rated at Level 1 or higher.

A character with vehicle-control rig cyberware has access to a Control Pool and the full Reaction and Initiative increases bestowed by the cyberware when controlling a vehicle via rigger adaptation.

Design Specifications
Design Cost: 35 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 2,800¥
Parts Availability: 4/7 days
Street Index: 2
Maximum Rating: NA
Base Time: 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Parts Cost: 2,500¥
Equipment Needed: Vehicle facility
CF Consumed: 1 (plus CF occupied by datajack port or remote control adaptation)
Load Reduction: 10 kg

Secondary Controls

Secondary controls duplicate the basic steering and speed control functions of the primary controls and are normally slaved to a vehicle's primary controls. The co-pilot controls common on many aircraft are examples of secondary controls.

This modification is not available for motorcycles.

Design Specifications
Design Cost: 5 points
Maximum Rating: NA
CF Consumed: 1
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 400¥
Parts Availability: 3/72 hours
Street Index: 1
Base Time: 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 2
Load Reduction: 0 kg

PROTECTIVE SYSTEM MODIFICATIONS

Protective-system modifications help protect a vehicle and its passengers. Protective systems include vehicle armor, crash cages, EnviroSeal™ and life-support systems.

Standard Armor

Standard vehicle armor consists of hardened ceramic and metallic panels that protect both vehicle and passengers from attacks. Each level of armor increases the Armor Rating of the vehicle by 1 point.

Armor adds weight as well. Each level of armor adds (Body x Body x 5) kilograms to the vehicle, which are counted against the vehicle's Load Rating. Vehicles cannot carry more armor than their Load Ratings allow.

Armor also increases a vehicle's Handling Rating, because maneuvering vehicles becomes more difficult as the vehicle's weight increases. For every 6 points of Armor added, increase the Handling of the vehicle by 1.

Design Specifications
Design Cost: 50 points per Armor Point
Maximum Rating: Limited by armor weight and vehicle Load Rating
CF Consumed: 0
Load Reduction: (Body x Body x 5) kilograms per Armor Point

Customization Specifications
Parts Cost: 1,250¥ per Armor Point
Parts Availability: 6/12 days
Street Index: 2.5
Maximum Rating: Limited by armor weight and vehicle Load Rating
Base Time: Armor value x 8 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: Desired Armor Rating ÷ 3
Equipment Needed: Vehicle facility
CF Consumed: 0 CF
Load Reduction: (Body x Body x 5) kilograms per Armor Point

Concealed Armor

Even casual observers can easily discern standard armor on a vehicle. Concealed armor is hidden in a vehicle's interior spaces so that anyone attempting to detect it must make a Perception Test. To determine the test target number, divide the Armor Rating by 3, then subtract the result from 9 and round up.

Concealed armor reduces the interior cargo space; if a vehicle's available cargo space cannot accommodate the desired Armor Rating, the character must either reduce the Armor Rating or use standard armor.

Concealed armor is not compatible with standard armor. (After all, what's the point of installing concealed armor, when installing standard armor on top of it blatantly gives away the fact that the vehicle is armored?)

Design Specifications
Design Cost: 50 points per level
Maximum Rating: Determined by armor weight and vehicle Load Rating
CF Consumed: 2 CF per Armor Point
Load Reduction: (Body x Body x 5) kilograms per Armor Point

Customization Specifications
Parts Cost: 2,000¥ per point
Parts Availability: 8/21 days
Street Index: 3.5
Maximum Rating: Determined by armor weight and vehicle Load Rating
Base Time: Armor value x 8 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: Desired Armor Rating ÷ 3 (rounded up)
Equipment Needed: Vehicle facility
CF Consumed: 3 CF per Armor Point
Load Reduction: (Body x Body x 5) kilograms per Armor Point

Ablative Armor

Ablative armor consists of dozens or hundreds of small, square, ceramic-metallic plates, roughly 10 centimeters long on each side. When a projectile or explosion strikes a vehicle, some of the ablative plates blow off the vehicle and deflect part of the damaging energy of the attack.

Ablative armor adds twice its level to a vehicle's Armor Rating, to a maximum equal to the vehicle's Body. When struck by a weapon that has a Power greater than 3 times the total modified Armor Rating, reduce the ablative armor level by 1. Ablative armor is not hardened and thus does not stage down the damage code of attacks.

Installing or replacing ablative armor plates takes 6 hours and does not require any Skill Test. Ablative armor is not available as a design option, cannot be installed on aircraft and is not concealable.

Regardless of its level, ablative armor reduces the vehicle's available Load by (Body x 100) kilograms. Ablative armor does not consume CF. A vehicle with ablative armor is automatically considered security- or military-grade.

ABLATIVE ARMOR TABLE

Ablative Level	Availability	Cost	Street Index
1	8/14 days	700¥	2
2	12/14 days	1,600¥	2
3	14/21 days	2,500¥	2

Advanced Passenger Protection Systems (APPS™)

The APPS™ system consists of specially secured seat belts, additional impact-activated air bags in all passenger positions, and special reinforcement of a vehicle's interior body panels.

In a crash, the system reduces the Power of crash damage by half. To exit the vehicle following such a crash, however, requires a Strength (5) Test.

APPS™ is not available for motorcycles.

Design Specifications
Design Cost: 30 points per seat
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 2,500¥ per seat
Parts Availability: 3/6 days
Street Index: 1
Maximum Rating: NA
Base Time: 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 1
Load Reduction: 0 kg

Crash Cages

A crash cage consists of a padded, hydraulically cushioned passenger cabin and seating that protect passengers in a crash. In the event of a crash, a crash cage provides each vehicle occupant with an extra 6 dice for the necessary Damage Resistance Test.

This accessory is not available for motorcycles.

Design Specifications
Design Cost: 40 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 10 kg

Customization Specifications
Parts Cost: 3,500¥
Parts Availability: 4/96 hours
Street Index: 2
Maximum Rating: NA
Base Time: 16 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle shop
CF Consumed: 2
Load Reduction: 25 kg

EnviroSeal™ System

The EnviroSeal™ system provides a vehicle with gas-tight (or watertight) seals. Note that opening windows, doors, or hatches breaks the integrity of the seal for as long as the windows, doors or hatches remain open. Note also that this system does not provide life support for a vehicle's occupants. For submersible operations, a vehicle's engine compartment must be sealed separately.

Light damage to a sealed vehicle breaches the seal. Emergency slap-patches that can handle holes made by light damage are available at a modest cost of 5 nuyen each. Of course, some contamination may penetrate even if the hole is sealed relatively quickly. Moderate vehicle damage or worse cannot be sealed without work on the vehicle.

EnviroSeal™ is not available for motorcycles.

Cabin overpressurization: This additional option is available with all EnviroSeal™ systems. A cabin-overpressurization system uses air pumps to increase the air pressure inside a vehicle's cabin, so that external contaminants are kept out of the vehicle if a window, door or hatch is opened or a light-damage breach occurs. This option is commonly incorporated in emergency rescue, decontamination and reconnaissance vehicles designed for use in hazardous, toxic or NBC (Nuclear/Biological/Chemical) contamination areas.

Cabin overpressurization does not work underwater or if the vehicle sustains Moderate or greater damage.

Design Specifications
Design Cost:
Gas Seal: Body x 3 points
Water Seal: Body x 10 points
Engine Seal: Body x 15 points
Cabin Overpressurization: Body x 75 points
Maximum Rating: NA
CF Consumed: 0 (1 CF with cabin overpressurization)
Load Reduction: 0 kg (10 kg with cabin overpressurization)

Customization Specifications
Parts Cost
Gas Seal: Body x 250¥
Water Seal: Body x 750¥
Engine Seal: Body x 1,000¥
Cabin Overpressurization: Body x 5,000¥
Parts Availability: 8/14 days
Street Index: 2.5
Maximum Rating: NA
Base Time: 12 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle facility
CF Consumed: 1 (2 CF with cabin overpressurization)
Load Reduction: 0 kg (15 kg with cabin overpressurization)

Life Support Systems

Life-support systems provide oxygen and basic climate control inside a sealed vehicle cabin or cockpit. Each point of CF dedicated to life-support provides ten man-hours of support (ten hours for one man, five hours for two and so on).

Design Specifications
Design Cost: 5 points + 1 point per man-hour
Maximum Rating: NA
CF Consumed: 1 CF per 10 man-hours
Load Reduction: 25 kg per 10 man-hours

Customization Specifications
Parts Cost: 500¥ + 100¥ per man-hour
Parts Availability: 8/14 days

Street Index: 2.5
Base Time: 8 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle shop
CF Consumed: 1 CF per 10 man-hours
Load Reduction: 25 kg per 10 man-hours

Roll Bars

Roll bars add rigidity to vehicles and mitigate damage from crashes. For rag-top vehicles (vehicles with convertible tops), roll bars negate the double Damage Resistance penalty. For hard-top vehicles, roll bars add 3 dice to any character's Damage Resistance Test following a crash. Roll bars are also required when installing certain vehicle mounts on the roofs of civilian vehicles (see **Vehicle Weapon Mounts,** p. 131).

Design Specifications
Design Cost: 0 points
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 2,000¥
Parts Availability: 3/72 hours
Street Index: 1
Maximum Rating: NA
Base Time: 24 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle shop
CF Consumed: 0
Load Reduction: 0 kg

Smart Armor Systems (SAS)

Smart, or "proactive," armor systems use small hexagonal explosive cells, each approximately 5 centimeters in diameter and 10 centimeters high. A fine wire mesh of sensitive electrical circuitry is suspended approximately 1 meter away from the skin of the vehicle. Whenever a projectile penetrates the wire mesh, the penetration is relayed to a system computer that instantaneously determines the size and impact location of the projectile, then detonates a portion of the explosive cells to offset or deflect the projectile's impact.

In game terms, whenever a projectile strikes his smart-armor-equipped vehicle, the player controlling the vehicle rolls 2 dice, adds the results together and compares that result to the Activation Target Number. The first time a projectile strikes the vehicle, the Activation Target Number is 3. For each successive hit (regardless of whether or not it causes damage), increase the target number by 1. Note that a burst fire or full autofire attack counts as one "hit" for these purposes.

If the roll result is greater than or equal to the Activation Target Number, the smart armor reduces the damage code of *all* attacks by one level. Standard reductions for standard munition attacks against vehicles apply as well, so the damage codes of standard bullets and explosives are reduced by two levels (D to M, S to L, M or lower to no damage). Damage codes for anti-vehicle munitions are reduced by one level.

Dangerous Dave is a Desert Rat marine based at the Twenty-Nine Palms Combat Center in the Mojave Desert. Dave is driving the Murdilizer, a Ferrari Appaloosa equipped with SAS, into a running gun battle with some Aztechnology-backed mercs attempting to grab some telesma material from the Joshua Tree National Monument.

During the first Combat Turn, the Murdilizer takes a hit from a barrage of heavy machine gun fire (damage 10S, boosted up to 16D to account for full autofire). The Appaloosa hasn't been hit yet, so Dave rolls 2D6 against an Activation Target Number 3. The test generates a 5, so the smart armor stages the damage down to 16S. Additionally, the machine gun is not firing anti-vehicle munitions, so the damage is staged down another level to 16M (per standard vehicle damage rules, p. 53). Consequently, Dave makes the Appaloosa's Resistance Test against 16M damage (minus Armor modifiers).

During the next Combat Turn, an Aguilar attack helicopter pops up over a mesa and lobs a Block II Outlaw AVM (damage 20D) at the Murdilizer. The Appaloosa has already taken one hit, so the Activation Target Number increases from 3 to 4. Dave rolls 2D6 but gets only a 2. The SAS fails to function, and the AVM hits the Appaloosa full on. To compound the bad luck, the Outlaw is an anti-vehicle munition, so its damage code is not staged down against vehicles. Dave must therefore make a Damage Resistance Test against 20D damage, with half the Murdilizer's Armor Rating applying against the attack's Power. (Now you know why the other jarheads call him "Dangerous Dave.")

After a vehicle's smart armor has taken a hit, the character can replace the expended explosive cells. Doing so returns the Activation Target Number to 3 for the next attack against the vehicle. The repair takes approximately eight hours and requires no Skill Test.

To install smart armor as a vehicle customization, the rigger or mechanic must make three successful Skill Tests—a Demolitions Build/Repair Test, an Electronics Test and a Computer Test. Smart armor is not available for vehicles with Body Ratings lower than 4, and it cannot be concealed.

If smart armor is incorporated during the vehicle design process, the vehicle is considered military-grade.

Design Specifications
Design Cost: 250 points
Maximum Rating: NA
CF Consumed: 2
Load Reduction: Body x 50 kg per Armor Point

Customization Specifications
Parts Cost: 20,000¥ (installment), Body x 500¥ (replacement)
Parts Availability: 10/28 days
Street Index: Not available on the street, chummer—hope you have good contacts
Maximum Rating: NA
Base Time: Body Rating x 40 hours

Skill: Demolitions B/R, Electronics, Computer
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 3 CF per Armor Point
Load Reduction: Body x 50 kg per Armor Point

SIGNATURE MODIFICATIONS

Signature modifications reduce or mask a vehicle's thermographic or radar profile and make detecting the vehicle more difficult for sensor systems.

Thermal Baffles

Thermal baffles are heat-blocking and absorbing materials added to the chassis of a vehicle to reduce its thermal signature. This makes detecting and locking on to the vehicle harder for infrared sensors.

Thermal baffles are available only for vehicles with gasoline, methane, diesel and jet engines. Like vehicle armor, thermal baffles are heavy materials. Each point of thermal baffle weighs (Body x 50) kilograms, which counts against the vehicle's Load Rating.

Players also need to keep separate track of the total rating of thermal masking on a vehicle, because that rating serves as a positive modifier on any Perception Tests made against the vehicle that involve non-vehicle thermographic detection techniques.

Design Specifications
Design Cost: 75 points per +1 increase
Maximum Improvement: +2 Signature or determined by weight of thermal baffles and vehicle Load Rating (whichever is lower)
CF Consumed: 0 CF
Load Reduction: Body x 50 kg per +1 increase

Customization Specifications
Parts Cost: For each +1 increase to Signature:
Ground Vehicles: Body x 5,000¥
Motorcycles: Body x 6,000¥
Trucks and Fixed-Wing Aircraft: Body x 7,500¥
Tractors and Helicopters: Body x 10,000¥
Hovercraft: Body x 3,750¥
Watercraft and Zeppelins: Body x 2,500¥
Parts Availability: 6/14 days
Street Index: 2
Maximum Improvement: +2 Signature or determined by weight of thermal baffles and vehicle Load Rating (whichever is lower)
Base Time: (Level of improvement x 8) hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 3 CF per +1 increase
Load Reduction: Body x 50 kg per +1 increase

Active Thermal Masking

Active thermal masking is a high-powered coolant system that temporarily absorbs heat generated by the vehicle's power plant. This modification is available only for customized gasoline, methane, diesel and jet engines, except for motorcycle engines (see **Engine Modifications,** p. 120). Each level of engine customization allows one level of active masking, and each level of active masking increases the vehicle's Signature by 1.

During operation, the vehicle loses 15 meters per turn to its Speed Rating for each level of masking activated, and the vehicle cannot exceed its adjusted Speed Rating. The system runs for a duration equal to (60 – [masking x 5]) minutes. Running the coolant system longer than the indicated duration produces 1 Stress Point per minute and forces the vehicle to make a Stress Test each minute (see **Stress,** p. 25). Characters can switch off the masking system before the end of the specified duration.

At the end of the duration, the masking system must shut down for ten minutes to vent accumulated heat. During this period the vehicle Signature falls to 2, regardless of any other Signature modifiers in effect.

Design Specifications
Design Cost: For the first level of masking, the cost equals the cost of engine customization multiplied by 2. For each additional level, increase the multiplier by .25.
Maximum Improvement: +2 Signature or Engine Customization level (whichever is lower)
CF Consumed: 3
Load Reduction: 100 kg

Customization Specifications
Parts Cost: For the first level of masking, the cost equals the cost of engine customization multiplied by 2. For each additional level, increase the multiplier by .25.
Parts Availability: 8/21 days
Street Index: 2
Maximum Improvement: +2 Signature or Engine Customization level (whichever is lower)
Base Time: (Level of improvement x 8) hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 3
Load Reduction: 100 kg

Radar-Absorbent Materials (RAM)

Radar-absorbent materials consist of special coatings and enamels that absorb radar signals and convert them into heat or small magnetic fields. As a result, the vehicle reflects back very little radar energy, making it harder for sensors to detect and lock on to it. Each level of RAM coating applied to a vehicle increases its Signature by 1, up to a maximum improvement of +3.

RAM is extremely hard to obtain, even for licensed security agencies. Normally, RAM is available to military agencies. Therefore, if players or gamemasters incorporate RAM as part of a vehicle during vehicle design, the vehicle is automatically considered military grade.

Design Specifications
Design Cost: (Levels of improvement)^3 x 50 points
Maximum Improvement: +3 Signature
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: (Levels of improvement)^3 x 25,000¥
Parts Availability: 18/30 days
Street Index: Military only

Maximum Improvement: +3 Signature
Base Time: 12 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

VEHICLE WEAPON MOUNTS

Vehicle weapon mounts use the weight of the vehicle to stabilize the weapon against the vehicle's movement and to provide some recoil resistance as well. Though ostensibly licensed only to law enforcement, private security and military organizations, a number of general-purpose vehicle-weapon mounts are available on the shadow market. Certain weapons require certain special mounts; those requirements are described in the appropriate weapon descriptions.

A vehicle's Body Rating determines the number of hardpoints and firmpoints it can accommodate. In turn, the vehicle's hardpoints and firmpoints determine the number of weapon mounts the vehicle can accommodate. See **Body Rating and Weapon Mounts,** p. 22.

Each hardpoint is worth 2 points and each firmpoint counts for 1 point. The total point value of all the hardpoints and firmpoints on a vehicle cannot exceed the vehicle's Body Rating. Heavy weapons (MMGs and larger) and vehicle weapons must be mounted on hardpoints. LMGs and small arms (assault rifles and smaller) can be mounted on firmpoints.

Motorcycles with medium or larger sidecars and sufficient Body can accommodate 1 hardpoint. The hardpoint can only take a forward-firing fixed weapon mount and must be in the sidecar (see **Sidecars,** p. 146).

If players or gamemasters incorporate weapon mounts during vehicle design, the vehicle receives the additional Mark-Up Factor multiplier for security- or military-grade vehicles.

Firearm Conversion Kits

A firearm conversion kit is required for mounting any personal firearm, from pistols to man-portable heavy weapons to fixed mounts or turrets. Conversion kits are not required to mount firearms on pintle or ring mounts.

To convert a firearm for mounting on a vehicle, the character must make an appropriate Weapon B/R (4) Test. The base time is 12 hours. Additionally, the character needs a Weapons Kit (see p. 244, **SRII**) to make the conversion.

Any accessories, features or properties that are part of the weapon are also available when it is mounted as a vehicle weapon. However, external weapon accessories that are not part of the weapon cannot be fitted onto the converted weapon, with the exception of the smartgun system, which must be installed internally (p. 241, **SRII**). Converted firearms do not consume CF (though the mounts onto which they are fitted do).

Firearm conversion kits are not needed for weapons specifically designed to be mounted on vehicles, such as the water cannon from **SRII,** the Ares Firelance™ vehicle laser from **Fields of Fire,** or any of the vehicle weapons from this sourcebook.

Fixed Mounts

A fixed mount is a hardpoint or firmpoint with a weapon permanently affixed to it. Fixed mounts fire in a fixed arc (no more than 5 degrees to either side, up or down), so a driver "aims" the fixed-mount weapon by moving his vehicle. Fixed mounts commonly face forward or to the rear; side-facing mounts tend to interfere with a vehicle's handling. (Add the weapon's recoil to the vehicle's normal Handling Rating when a side-facing mount is fired. The driver must make a Driving Test against the increased Handling Rating or crash. Double the recoil modifiers for hovercraft; triple them for watercraft).

Single fixed-mount weapons must be placed directly along the vehicle's center line. Twin mounts may sit either side-by-side along the center line or may be placed on the left and right fairings of the vehicle. If different weapons are mounted on fixed mounts, both must sit side-by-side along the center line, to limit recoil imbalance (which is really bad for vehicle handling).

Fixed mounts reduce recoil modifiers by half before applying recoil compensation from any accessories. Thus, they cancel the double-recoil modifier for heavy weapons. Fixed mounts may be remotely operated by a gunner or by the rigger jacked into the vehicle.

Fixed mounts may be configured as external or internal mounts. External fixed mounts are easily seen by casual observers and are not protected by a vehicle's armor. Consequently, external mounts decrease a vehicle's Signature by 1.

Weapons on internal mounts are protected by the vehicle's armor and receive the benefit of Concealability (except when firing), but do not decrease the vehicle's Signature. An observer who makes a successful Perception (3) Test can spot an internal weapon mount but will not immediately deduce what the mount is used for. During vehicle combat, the controlling character must spend a Complex Action to extend or stow a weapon on an internal mount. While a weapon is armed, it is not protected by the vehicle's armor and it reduces the vehicle's Signature by 1.

Design Specifications
Design Cost:
External Hardpoint: 25 points
External Firmpoint: 10 points
Internal Hardpoint: 35 points
Internal Firmpoint: 20 points

FIREARM CONVERSION KITS

Weapon	Design Cost	Customization Cost	Availability	Street Index	Load Reduction
Pistol	1 point	150¥	4/36 hours	2	0 kg
Submachine Gun	1 point	350¥	5/48 hours	2	.25 kg
Rifle/Shotgun/LMG	2 points	750¥	6/72 hours	2.5	.5 kg
Heavy Weapons	3 points	1,000¥	16/14 days	2.5	1 kg

Maximum Rating: NA
CF Consumed:
External Hardpoint: 1
External Firmpoint: 0.5
Internal Hardpoint: 4
Internal Firmpoint: 3
Load Reduction: 10 kg, plus weapon's weight (all cases)

Customization Specifications
Parts Cost:
External Hardpoint: 2,000¥
External Firmpoint: 750¥
Internal Hardpoint: 3,000¥
Internal Firmpoint: 1,500¥
Parts Availability: 6/7 days
Street Index: 2
Maximum Rating: NA
Base Time: 24 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed:
External Hardpoint: 2
External Firmpoint: 1
Internal Hardpoint: 7
Internal Firmpoint: 5
Load Reduction: 10 kg, plus weapon's weight (all cases)

Gunnery Recoil Adjusters

The gunnery recoil adjuster is a unique form of recoil compensation available for vehicle weapons. The adjuster consists of high-precision micro-actuators that replace the weapon mount's servo-motors. When the weapon is fired, the actuators lower the weapon in minute increments to compensate for the effects of recoil.

In game terms, recoil adjusters work in the same way as standard recoil compensators do (see **Recoil Compensation,** p. 90, **SRII**). Each level of recoil adjuster negates 1 point of recoil.

Gunnery recoil adjusters are available for fixed mounts and turrets only. Recoil adjusters are not compatible with vehicle gyro-stabilization, because the rotational momentum interferes with the micro-actuators' minute adjustments.

Design Specifications
Design Cost: 10 points per level of recoil adjustment
Maximum Rating:
Fixed Firmpoint or Micro-Turret: 4
Mini-Turret: 6
Small Turret or Fixed Hardpoint: 9
Medium or Larger Turrets: 12
CF Consumed: 0
Load Reduction: 0 kg
Customization Specifications
Parts Cost: 500¥ per level of recoil adjustment
Parts Availability: 6/48 hours
Street Index: 1.5
Maximum Rating:
Fixed Firmpoint or Micro-Turret: 4
Mini-Turret: 6
Small Turret or Fixed Hardpoint: 9
Medium or Larger Turrets: 12
Base Time: 24 hours
Skill: Appropriate Vehicle B/R skill
Target Number: 4
Equipment Needed: Vehicle kit
CF Consumed: 1
Load Reduction: Rating + 24 kg

External Missile and Rocket Mounts

Because of their size, missiles and rockets use slightly different rules for fixed weapon mounts. Though every missile and rocket firing system takes up one firmpoint, the number and types of missiles or rockets carried in different systems vary, depending on the size of the vehicle.

For ground vehicles, externally mounted missiles and rockets sit on roof-rack mounts. Civilian vehicles armed in this manner must also have roll bars for recoil stability. A vehicle may carry a number of missiles or rockets equal to its Body Rating in this manner. Rockets and missiles mounted externally receive no protection from the vehicle's armor and they reduce the Signature of the vehicle by 1, regardless of the number of missiles or rockets mounted.

Aircraft and helicopters generally carry rockets and missiles on pinions under their wings, fairings and fuselages. An aircraft may carry a number of external mounts equal to its Body Rating. Every two external mounts installed on an aircraft reduce its Signature by 1. Each aircraft mount may carry up to 300 kilograms of missiles or rockets.

In all cases, remember that a vehicle cannot carry more missiles or rockets than its Load Rating allows. And missiles—particularly anti-vehicle missiles—can be *very* heavy.

Internal Missile and Rocket Mounts

Internal rocket and missile mounts do not decrease a vehicle's Signature and receive the benefit of the vehicle's armor protection.

An internal rocket or missile mount takes up one firmpoint. However, the number of missiles or rockets a vehicle can carry is limited by the vehicle's CF. For every 3 CF, a vehicle can carry 2 missiles or rockets. The mounting actuators consume an additional 2 CF.

To fire an internally stored rocket or missile, the driver must open the weapon bay door and arm the rocket or missile. While the missile is armed and ready to fire, the vehicle's Signature decreases by 1, until the munition is fired or is stowed back in its storage place. Arming or stowing a munition requires one Complex Action.

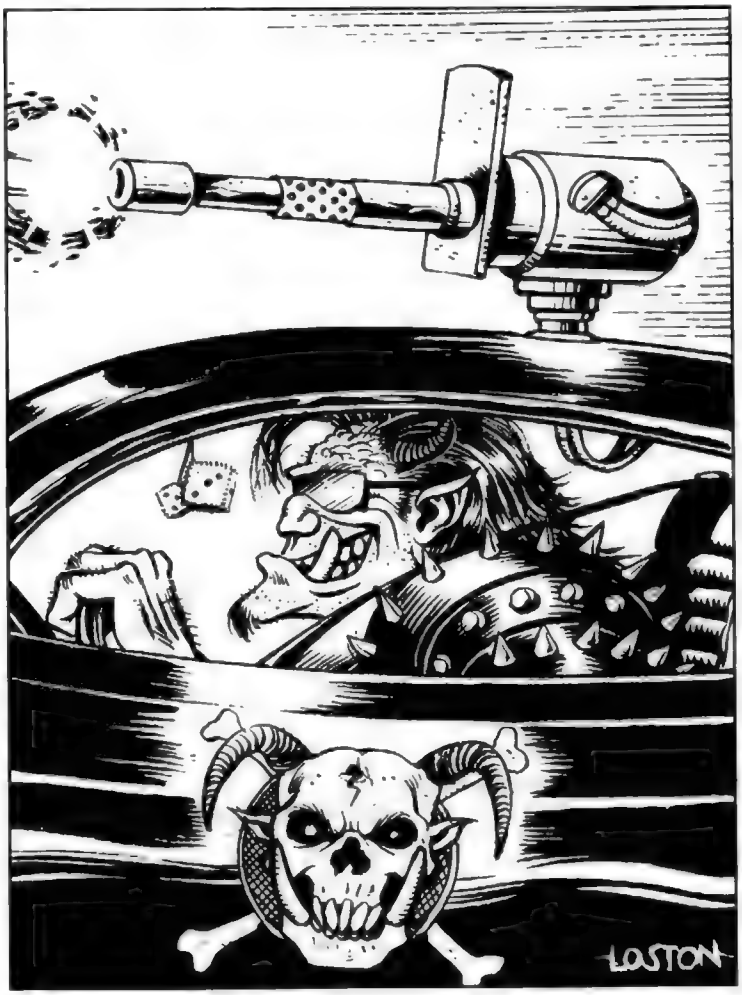
In all cases, remember that a vehicle cannot carry more missiles or rockets than its Load Rating will allow. An aircraft or helicopter can carry a number of internal mounts equal to half its Body Rating.

Pintle Mounts

Pintle mounts, the simplest mounts available, consist of simple reinforced holes and swivels mounted into the side of a vehicle. Pintle mounts accept any firmpoint-sized weapon. Firing arcs are generally 60 degrees to the left and right and 30 degrees up and down (which allows the vehicle to engage low-flying aircraft at a height of less than half the weapon's long-range value). Pintle mounts count as one firmpoint.

To mount a weapon on or remove a weapon from a pintle mount requires a Complex Action; if the vehicle is moving, it also requires a Quickness (3) Test. Drone pilots and riggers jacked into the vehicle cannot remotely control pintle mounts. Weapons in a pintle mount receive the equivalent of 2 points of recoil compensation.

Design Specifications
Design Cost: 1 point
Maximum Rating: NA



CF Consumed: 0 (not including passenger space)
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 50¥
Parts Availability: 4/96 hours
Street Index: 1.5
Maximum Rating: NA
Base Time: 12 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 2
Equipment Needed: Vehicle shop
CF Consumed: 0 (not including passenger space)
Load Reduction: 0 kg

Ring Mounts

Ring mounts are a step up from the basic pintle mount. Ring mounts consist of a freely rotating ring set on the top of a vehicle, with a tripod assembly attached to the ring; the gunner stands in the middle of the ring to fire the weapon. The ring rotates in a full circle, but its vertical traversing remains 30 degrees upwards or downwards. Mounting or dismounting a weapon from a ring mount requires a Complex Action, as well as a Quickness (3) Test if the vehicle is moving.

Ring mounts may only be mounted on hardtop vehicles or on open-top or convertible vehicles equipped with roll bars. Ring mounts installed on helicopters are actually door guns, which require the gunner to open the door on one side to fire out (and also exposes the pilot, crew and the rest of the helicopter interior to incoming fire).

Ring mounts count as a hardpoint and can mount any man-portable heavy weapon, as well as LMGs. Ring mounts cannot be remotely controlled by a drone pilot or a rigger jacked into the vehicle. Weapons on a ring mount receive the equivalent of 6 points of recoil compensation.

Design Specifications
Design Cost: 10 points
Maximum Rating: NA
CF Consumed: 1 (16 CF for door gun configuration)
Load Reduction: 25 kg

Customization Specifications
Parts Cost: 3,000¥
Parts Availability: 8/14 days
Street Index: 2
Maximum Rating: NA
Base Time: 8 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle shop
CF Consumed: 1 (16 CF for door gun configuration)
Load Reduction: 25 kg

Smartlink Integration Kits

The smartlink integration kit is an interface that connects smartgun-equipped weapons mounted in fixed mounts and turrets with gunners who are equipped with smartlink cyberware. Without the integration kit, smartgun-equipped weapons mounted in fixed mounts or turrets do not gain the benefit of the smartlink during Manual Gunnery Tests.

Remember that gunners must have smartlink cyberware to take full advantage of the smartlink system. If the gunner using a vehicle smartgun does not have smartlink cyberware, treat the gunner as if he is wearing smartgoggles (see p. 90, **SRII**).

The gunner need not be jacked into the vehicle to take advantage of the smartlink system. The smartlink integration kit also contains palm-induction links for weapon controls. Remember that smartlink modifiers do not apply to Sensor-Enhanced Gunnery or Missile Attack Tests.

The smartlink integration kit is not necessary for weapons mounted on pintle or ring mounts.

Design Specifications
Design Cost:
Smartlink Level I: 250 points
Smartlink Level II: 350 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost:
Smartlink Level I: 650¥
Smartlink Level II: 900¥
Parts Availability:
Smartlink Level I: 4/48 hours
Smartlink Level II: 6/48 hours
Street Index:
Smartlink Level I: 1
Smartlink Level II: 2
Maximum Rating: NA
Base Time: 24 hours
Skill: Appropriate Vehicle B/R skill
Target Number: 4
Equipment Needed: Vehicle kit
CF Consumed: 1
Load Reduction: 0 kg

Turrets

Turrets are motorized, armored ring mounts. Turrets provide weapons with armor protection but also increase a vehicle's profile. Consequently, a turret reduces a vehicle's Signature by 1. Civilian vehicles can mount turrets only if they are already equipped with roll bars.

Turrets come in six sizes: mini, small, medium, large and extra-large. Mini turrets, which are found on large drones and pickup-sized trucks, take up one hardpoint and have a Weapon Value of 2. Small turrets, found on most anti-riot vehicles, take up two hardpoints and have a Weapon Value of 3. Medium turrets, installed mostly on heavy security vehicles or armored personnel carriers, take up three hardpoints and have a Weapon Value of 6.

Large turrets, which are found on light tanks or heavy gunships, take up four hardpoints and have a Weapon Value of 8. Extra-large turrets belong almost exclusively to heavy main battle tanks, take up six hardpoints and have a Weapon Value of 10. However, standard rigger characters do not have access to such turrets and vehicles.

The weapon values of all weapons mounted on a turret may not exceed the turret's weapon value, per the Weapon Values Table.

All turrets have a 360-degree firing arc, with –10 degrees depression and 45 degrees elevation. Some turrets also have additional internal space that can accommodate ammunition bins, smoke launchers, sensor systems, electronics packages and the like. Mini turrets provide 1 CF of additional space, small turrets 2 CF, and medium turrets 4 CF and internal seating for two.

When firing turret-mounted weapons, reduce recoil modifiers by half before applying recoil compensation from any accessories. Consequently, turrets cancel the double-recoil modifier for heavy weapons. Turrets are manually operated by a turret gunner.

Anti-Aircraft Turrets

Anti-aircraft capable turrets can elevate to a maximum angle of 75 degrees, which allows weapons on them to fire at aircraft at a height lower than 95 percent of the weapon's long-range value. Multiply the design or parts cost for such turrets by 1.5 and increase the standard CF Consumed by 1 CF. The turret's Load Reduction remains the same.

Pop-Up Turrets

Pop-up turrets remain concealed from plain view until their weapons are used. While they are concealed, the standard –1 penalty to the vehicle's Signature does not apply. To "pop up" this kind of

WEAPON VALUES TABLE

Turret Type	Maximum Weapon Value Allowed	Hardpoint Requirement
Mini	2	1 hardpoint
Small	3	2 hardpoints
Medium	6	3 hardpoints
Large	8	4 hardpoints
Extra-Large	10	6 hardpoints

Weapon	Weapon Value
SMG	1
Microwave Designator	1
Rifle	1
Lt Machine Gun	1.5
Med Machine Gun	2
Hvy Machine Gun	2
AVM/AVR Launcher	2
Vindicator Minigun	2
Vanquisher/Vengeance Minigun	2.5
Assault Cannon	3
Autocannon	3
Vehicle Laser	3
Water Cannon	3
Ballista Missile System	4
Mortar	4
Outlaw Missile System	5

turret for operation, the gunner must spend a Complex Action. The turret weapon is ready for use on the next available Action.

Pop-up turrets have weapon values 1 point lower than standard weapon values. CF consumption for these turrets is double the standard CF consumption. Large or extra-large turrets cannot be constructed with pop-up capability.

Design Specifications
Design Cost:
Mini-turret: 125 points
Small turret: 250 points
Medium turret: 500 points
Maximum Rating: NA
CF Consumed:
Mini-turret: 6
Small turret: 7
Medium turret: 16
Load Reduction:
Mini-turret: 25 kg
Small turret: 100 kg
Medium turret: 1,000 kg (1 ton)

Customization Specifications
Parts Cost:
Mini-turret: 5,000¥
Small turret: 7,500¥
Medium turret: 15,000¥
Parts Availability: Parts availability is determined with the following formula:

([Vehicle Cost ÷ 25] ÷ 6) x (Vehicle Cost ÷ 25) x 14 = days required to obtain parts
Street Index: 2 for a mini, 3 for a small, medium turrets available to military only
Maximum Rating: NA
Base Time: 72 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed:
Mini-turret: 7
Small turret: 8
Medium turret: 24
Load Reduction:
Mini-turret: 25 kg
Small turret: 100 kg
Medium turret: 1,000 kg (1 ton)

Remote Turrets

Remote turrets are weapons-only mounts that the operator controls from inside the passenger compartment via remote sensors. A separate gunner or a rigger may operate a remote turret (military vehicles often use two riggers, one controlling the vehicle and the other controlling the turret).

Remote turrets are available in micro, mini, small and medium sizes. Micro turrets, normally installed on smaller drones, take up 1 firmpoint and have a Weapon Value of 1.

Both anti-aircraft capability and pop-up options are available for remote turrets. Pop-up micro-turrets have a Weapon Value of 1 and take up 1 CF.

Large and extra-large remote turrets exist, but they are used only on large warships, such as destroyers and cruisers, which are out of the price range of most shadowrunners.

Design Specifications
Design Cost:
Micro-turret: 100 points
Mini-turret: 175 points
Small turret: 350 points
Medium turret: 600 points
Maximum Rating: NA
CF Consumed:
Micro-turret: 0
Mini-turret: 3
Small turret: 4
Medium turret: 4
Load Reduction:
Micro-turret: 10 kg
Mini-turret: 25 kg
Small turret: 100 kg
Medium turret: 1,000 kg (1 ton)
Customization Specifications
Parts Cost:
Micro-turret: 2,500¥
Mini-turret: 6,000¥

Small turret: 9,000¥
Medium turret: 17,500¥
Parts Availability: Parts availability is determined with the following formula:

([Vehicle Cost ÷ 25] ÷ 6) x (Vehicle Cost ÷ 25) x 14 = days required to obtain parts

Street Index: 2 for micro and mini, 3 for a small. Medium turrets are available to the military only, so grease your military contact's palms.
Maximum Rating: NA
Base Time: 72 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed:
Micro-turret: 1
Mini-turret: 4
Small turret: 5
Medium turret: 8
Load Reduction:
Micro-turret: 10 kg
Mini-turret: 25 kg
Small turret: 100 kg
Medium turret: 1,000 kg (1 ton)

Vehicle Gyroscopic Stabilizers

Vehicle gyroscopic stabilizers are available for weapons mounted in fixed mounts and turrets. As with normal weapon gyros, every point of vehicle gyro-stabilization reduces the combined modifiers for recoil and movement (the latter applies only to vehicles moving by means of mechanical legs).

There is, however, a drawback to gyro-stabilization. The rotational momentum generated by a gyroscope tends to interfere with the maneuverability of a vehicle. If the total active gyroscopic stabilization rating is greater than the vehicle's Body, the vehicle receives a +1 modifier to its Handling for every point of gyro-stabilization greater than the vehicle's Body.

Vehicle gyro-stabilization is not compatible with gunnery recoil adjusters.

Design Specifications
Design Cost: 15 points per level of gyro-stabilization
Maximum Improvement: 2 x Body
CF Consumed: 1
Load Reduction: Rating + 24 kg

Customization Specifications
Parts Cost: 1,000¥ per level of gyro-stabilization
Parts Availability: 8/72 hours
Street Index: 1.5
Maximum Improvement: 2 x Body
Base Time: 24 hours
Skill: Appropriate Vehicle B/R skill
Target Number: 4
Equipment Needed: Vehicle kit
CF Consumed: 1
Load Reduction: Rating + 24 kg

ELECTRONIC SYSTEMS

Electronic systems include the computer and electronic devices that regulate and control vehicles, as well as sensor and electronic warfare systems.

BattleTac™ FDDM Receiver Module

FDDM (Fire Direction Data Manager) is a spin-off of the BattleTac™ information system. The FDDM receiver module allows a vehicle to transmit and receive targeting information among other drones via the remote control network. This enables drones to fire on targets outside of their lines of sight.

For more information, see **Indirect Fire,** p. 60.

Design Specifications
Design Cost: Pilot Rating x 350 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: Pilot Rating x 35,000¥
Parts Availability: 10/21 days
Street Index: 3
Maximum Rating: NA
Base Time: 64 hours
Skill: Computer B/R
Target Number: 4
Equipment Needed: Microtronics shop
CF Consumed: 0
Load Reduction: 0 kg

BattleTac™ IVIS Receiver Modules

IVIS is another spin-off from the BattleTac™ information system. BattleTac IVIS enhances data-sharing capabilities between a remote-control deck and the drones in its network. This enables drones to execute even more complex and sophisticated tactics to accomplish their assigned tasks.

The IVIS receiver module allows a remote-controlled vehicle or drone to participate in the IVIS system. BattleTac IVIS can provide extra dice for the Comprehension Test or it can create an IVIS Pool for vehicles or drones to use. Only remotely controlled vehicles or drones that have their Pilots modified to interact with BattleTac IVIS receive the benefits of this system.

For more information, see **The BattleTac IVIS System,** p. 6

Design Specifications
Design Cost: Pilot Rating x 250 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: Pilot Rating x 25,000¥
Parts Availability: 8/14 days
Street Index: 3
Maximum Rating: NA
Base Time: 64 hours
Skill: Computer B/R
Target Number: 4

ELECTRONIC COUNTERMEASURES (ECM) SYSTEMS TABLE

ECM Level	Design Classification	CF Consumed	Design Points	Customization Cost	Weight (kg)	Availability	Street Index
1	Standard	0/1	250	25,000¥	12	5/7 days	2.5
2	Enhanced	1/2	750	75,000¥	25	6/10 days	3
3	Advanced	2/3	1,250	125,000¥	35	7/14 days	3.5
4	Premium	3/6	2,500	250,000¥	50	8/21 days	4
5	Security I	2/3	1,250	375,000¥	35	10/30 days	—
6	Security II	4/8	1,500	750,000¥	75	12/45 days	—
7	Security III	6/9	5,000	1.5M¥	110	14/60 days	—
8	Military I	10/12	7,500	7.5¥	150	16/3 months	—
9	Military II	12/16	12,500	15M¥	200	18/6 months	—
10	Military III	16/20	25,000	30M¥	250	20/1 year	—

CF Consumed: The first number is the CF consumed if the ECM is installed during vehicle design. The second number is the CF consumed if the ECM is installed as a vehicle customization.

Equipment Needed: Microtronics shop
CF consumed: 0
Load Reduction: 0 kg

Electronic Countermeasures (ECM)

Electronic countermeasures include active devices such as barrage radio jammers, infrared jammers, chaff and flare dispensers, and wave harmonic disrupters that confound sensor systems and jam the communications of opposing remote control operations. See **ECM** (p. 31) for more information.

Though normally restricted to security and military agencies, several low-level ECM systems are available on the public market. These are sold primarily to celebrities and VIPs as a defense against prying eyes armed with intrusive drones and sensors.

Design Specifications
Design Cost: See ECM table
Maximum Rating: See ECM table
CF Consumed: See ECM table
Load Reduction: See ECM table

Customization Specifications
Parts Cost: See ECM table
Parts Availability: See ECM table
Street Index: See ECM table
Base Time: 16 hours per level
Skill: Electronics B/R
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: See ECM table
Load Reduction: See ECM table

Electronic Counter-Countermeasures (ECCM)

Electronic counter-countermeasures include signal amplifiers and noise filters that nullify the effects of ECM. See **Electronic Countermeasures** (p. 31) for information on the use of ECCM.

ECCM systems are generally more readily available than ECM, because ECCM helps to counter the interference caused by the increasing congestion of the radio spectrum in most metropolitan areas. Higher-level ECCM systems are available only through licensed security firms or military organizations.

Design Specifications
Design Cost: See ECCM table
Maximum Rating: See ECCM table
CF Consumed: See ECCM table
Load Reduction: See ECCM table

Customization Specifications
Parts Cost: See ECCM table
Parts Availability: See ECCM table
Street Index: See ECCM table
Maximum Rating: See ECCM table
Base Time: 16 hours per level
Skill: Electronics B/R
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: See ECCM table
Load Reduction: See ECCM table

Electronic Deception (ED)

Electronic deception measures are devices that feed sensors false information about the target's range, position, direction of travel and so on. Electronic deception is more subtle and insidious than ECM; a sensor won't know it's being deceived until the metahuman controller physically sees the target with his own eyes or video feeds. For more information on the use of electronic deception, see **Electronic Deception** (p. 32).

ED systems are generally restricted to security and military agencies and are almost impossible to come by on the streets.

Design Specifications
Design Cost: See ED table
Maximum Rating: See ED table
CF Consumed: See ED table
Load Reduction: See ED table

ELECTRONIC COUNTER-COUNTERMEASURES (ECCM) SYSTEMS TABLE

ECCM Level	Design Classification	CF Consumed	Design Points	Customization Cost	Weight (kg)	Availability	Street Index
1	Standard	0/1	100	110,000¥	12	4/7 days	2
2	Enhanced	1/2	300	30,000¥	25	4/10 days	2.5
3	Advanced	2/3	500	350,000¥	35	5/14 days	3
4	Premium	3/6	1,000	100,000¥	50	6/21 days	3.5
5	Security I	2/3	500	150,000¥	35	8/30 days	—
6	Security II	4/8	750	250,000¥	75	10/45 days	—
7	Security III	6/9	2,000	750,000¥	110	12/60 days	—
8	Military I	10/12	3,500	2.5¥	150	14/3 months	—
9	Military II	12/16	5,000	6M¥	200	16/6 months	—
10	Military III	16/20	10,000	12M¥	250	18/1 year	—

CF Consumed: The first number is the CF consumed if the ECCM is installed during vehicle design. The second number is the CF consumed if the ECCM is installed as a vehicle customization.

ELECTRONIC DECEPTION (ED) SYSTEMS TABLE

ED Level	Design Classification	CF Consumed	Design Points	Customization Cost	Weight (kg)	Availability	Street Index
1	Security I	2/3	150	50,000¥	35	8/30 days	3
2	Security II	4/5	400	150,000¥	45	8/45 days	3.5
3	Security III	6/7	1,000	400,000¥	60	8/60 days	4
4	Military I	4/5	2,500	1M¥	45	10/3 months	4.5
5	Military II	6/7	10,000	4M¥	60	12/6 months	5
6	Military III	8/9	20,000	8M¥	110	16/1 year	—

CF Consumed: The first number is the CF consumed if ED is installed during vehicle design. The second number is the CF consumed if ED is installed as a vehicle customization.

Customization Specifications
Parts Cost: See ED table
Parts Availability: See ED table
Street Index: See ED table
Maximum Rating: See ED table
Base Time: 16 hours per level
Skill: Electronics B/R
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: See ED table
Load Reduction: See ED table

Electronic Counter-Deception (ECD)

Electronic counter-deception measures use reality-checking electronic components, such as inertial navigation and flux density monitors, to negate the effects of ED. See **Electronic Deception** (p. 32) for more information on the use of ECD.

Electronic counter-deception systems are generally restricted to security and military agencies and are almost impossible to acquire on the streets.

Design Specifications
Design Cost: See ECD table
Maximum Rating: See ECD table
CF Consumed: See ECD table
Load Reduction: See ECD table

Customization Specifications
Parts Cost: See ECD table
Availability: See ECD table
Street Index: See ECD table
Maximum Rating: See ECD table
Base Time: 16 hours per level
Skill: Electronics B/R
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: See ECD table
Load Reduction: See ECD table

Electronics Ports

An electronics port is required for those electronic items unrelated to vehicle operations, such as radios, video cameras, surveillance measures and remote control decks. An electronics

ELECTRONIC COUNTER-DECEPTION (ECD) SYSTEMS TABLE

ECD Level	Design Classification	CF Consumed	Design Points	Customization Cost	Weight (kg)	Availability	Street Index
1	Security I	2/3	100	25,000¥	35	8/30 days	3
2	Security II	4/5	300	80,000¥	45	8/45 days	3.5
3	Security III	6/7	800	200,000¥	60	8/60 days	4
4	Military I	4	3,000	750,000¥	45	10/3 months	4.5
5	Military II	6	8,000	2M¥	60	12/6 months	5
6	Military III	8	20,000	5M¥	110	16/1 year	—

CF Consumed: The first number is the CF consumed if ECD is installed during vehicle design. The second number is the CF consumed if ECD is installed as a vehicle customization.

port allows these items to draw electrical power from the vehicle's power plant. Where applicable, electronic devices attached to such ports increase their Flux Ratings by half the vehicle's Body, rounded up.

Design Specifications
Design Cost: 10 points, plus the cost of the equipment (add the cost of the equipment to the final price of the vehicle)
Maximum Rating: NA
CF Consumed: 0.5 CF per 0.1 cubic meter of volume occupied by equipment (round up)
Load Reduction: Total weight of equipment

Customization Specifications
Parts Cost: 1,000¥, plus the cost of the equipment
Parts Availability: 3/6 days
Street Index: 1
Maximum Rating: NA
Base Time: 8 hours
Skill: Electronics B/R
Target Number: 3
Equipment Needed: Vehicle shop
CF Consumed: 1 CF per 0.1 cubic meter of volume occupied by equipment
Load Reduction: Total weight of equipment

Power Amplifiers

Power amplifiers increase the Flux Rating of sensors, ECM, ECCM, hardwired remote control decks and other electronic transmission devices. An increased Flux Rating increases the effective range of a remote control deck and makes it more resistant to electronic warfare. For more information, see **Electronic Warfare,** p. 68.

Design Specifications
Cost: 5 points per rating
Maximum Rating: 10
CF Consumed: 0.25 CF per rating (round down)
Load Reduction: 1 kg per rating

Customization Specifications
Parts Cost: 250¥ per rating
Parts Availability: Rating ÷ (rating x 12) hours
Street Index: 1.5
Maximum Rating: 10
Base Time: 8 hours
Skill: Electronics B/R
Target Number: 3
Equipment Needed: Vehicle shop
CF Consumed: 0.5 CF per rating (round up)
Load Reduction: 1 kg per rating

Sensors

Sensor systems include standard and enhanced audio/video sensors, thermal and radar sensors and ultrasound sensors, as well as identification, recognition and tracking software. See **Sensor-Enhanced Gunnery** (p. 58) and **Sensors** (p. 27) for information on using sensors.

Note that certain higher-level sensors are restricted security- and military-grade equipment and not available on the street (except from *very* well-connected fixers).

Design Specifications
Design Cost: See Sensor table
Maximum Rating: See Sensor table
CF Consumed: See Sensor table
Load Reduction: See Sensor table

Customization Specifications
Parts Cost: See Sensor table
Availability: See Sensor table
Street Index: See Sensor table
Maximum Rating: See Sensor table
Base Time: 16 hours per level
Skill: Electronics B/R
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: See Sensor table
Load Reduction: See Sensor table

ACCESSORIES

What's a rigger vehicle without custom, hand-picked accessories? The following descriptions present a wide assortment of items designed to custom-tailor any vehicle to a rigger's satisfaction.

SENSOR TABLE

Sensor Level	Design Classification	CF Consumed	Design Points	Customization Cost	Weight (kg)	Availability	Street Index
1	Standard	0/1	50	5,000¥	12	4/7 days	2
2	Enhanced	1/2	150	15,000¥	25	4/10 days	2.5
3	Advanced	2/3	250	25,000¥	35	5/14 days	3
4	Premium	3/6	500	50,000¥	50	6/21 days	3.5
5	Security I	2/3	250	75,000¥	35	8/30 days	—
6	Security II	4/8	300	125,000¥	75	10/45 days	—
7	Security III	6/9	1,000	375,000¥	110	12/60 days	—
8	Military I	10/12	1,500	1.25¥	150	14/3 months	—
9	Military II	12/16	2,500	3M¥	200	16/6 months	—
10	Military III	16/20	5,000	6M¥	250	18/1 year	—

CF Consumed: The first number is the CF consumed if the sensor is installed during vehicle design. The second number is the CF consumed if the sensor is installed as a vehicle customization.

Aircraft Drop Tanks

Drop tanks may be attached under an aircraft's wings or fuselage in lieu of rocket/missile mounts. For every two external mounts sacrificed, a pair of drop tanks may be added. (Drop tanks are installed in pairs to maintain aerodynamic balance.)

Each drop tank can hold 1,000 liters of fuel, so a pair of drop tanks increases an aircraft's fuel supply by 2,000 liters. Installing drop tanks on an aircraft decreases its Signature by 1. Each additional pair of drop tanks decreases the aircraft's Speed by 15, and every two pairs of drop tanks increases the vehicle's Handling by 1. Mounting drop tanks on an aircraft takes ten minutes.

The pilot may jettison drop tanks if he spends a Complex Action for that purpose. The aircraft's flight characteristics immediately return to their standard values. The cost of a pair of drop tanks is 8,000¥. Drop tanks have a Body of 1 and 3 Armor Points.

Amphibious Operation Packages

Amphibious-operation packages are used to modify ground vehicles for amphibious operations. If the vehicle has watertight seals and life support, it can be used for underwater operations. Three types of amphibious-operation packages are available: Level 1, Level 2 and Level 3.

Level 1 Package

The Level 1 package uses the vehicle's wheels as the source of motive power and enables a vehicle to travel through water at a speed of 15 meters per turn. While operating in this manner, the vehicle receives a +2 Handling modifier.

Note that surface operations may be performed by vehicles with unsealed engines. To perform submarine operations, however, a vehicle must have a sealed power plant.

Design Specifications
Design Cost: 25 points
Maximum Rating: NA
CF Consumed: 0 CF
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 2,500¥
Parts Availability: 5/10 days
Street Index: 1.25
Maximum Rating: NA
Base Time: 32 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Level 2 Package

The Level 2 package consists of a propeller or drive system linked to the vehicle's drive system. This system gives the vehicle Speed Rating 30 in the water, with no Handling modifier.

Design Specifications
Design Cost: 80 points
Maximum Rating: NA
CF Consumed: 0 CF
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 7,500¥
Parts Availability: 6/12 days
Street Index: 1.5
Maximum Rating: NA
Base Time: 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 2
Load Reduction: 0 kg

Level 3 Package

The Level 3 package consists of water-jet units and impellers that are linked to the vehicle's drive system. This package gives the vehicle Speed Rating 45 on the water, with no modifier to Handling.

Design Specifications
Cost: 200 points
Maximum Rating: NA
CF Consumed: 2
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 15,000¥
Parts Availability: 3/6 days
Street Index: 1
Maximum Rating: NA
Base Time: 80 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 5
Equipment Needed: Vehicle facility
CF Consumed: 4
Load Reduction: 0 kg

Anti-Theft Systems

Anti-theft systems come in all shapes and sizes and are rated from 1 to 10. The system rating represents the number of dice rolled in opposed tests made against intruders. The intruder uses an appropriate skill (normally the Electronics (Maglocks) Concentration) in the test.

If the intruder wins, he overrides the anti-theft system and can enter and hot-wire the vehicle for operation. If the system wins, the appropriate anti-theft action occurs, depending on what the designer installed. Some common anti-theft actions are listed below. The gamemaster and players should work together to define the exact parameters of the system.

Automated Call: The vehicle makes an automatic call to Lone Star, the PANICBUTTON system or a similar security service. The vehicle must be equipped with a portable phone installed in an electronics port.

Electric Shock: An electrical current ripples through the outer shell of the vehicle, giving a nasty shock to the would-be thief. The voltage level (and appropriate damage) varies, depending on the whim of the driver. As a general rule, a standard shock system does the same damage as a Defiance Super Shock taser (10S Stun). Lethal shocks (doing physical damage) are possible, though they are illegal in most countries (not as if that's stopped shadowrunners in the past, though).

A standard shock system costs an additional 2,000 nuyen, or 20 Design Points. Gamemasters are free to raise the price even higher for an anti-theft system that gives lethal electric shocks.

Explosion: Characters who really hate vehicle thieves can set up their anti-theft systems to blow up the vehicle with plastic explosives (either Compound IV or Compound XII). As a general rule, vehicles must be packed with enough plastic explosives to deliver a Power equal to the square of their Body Ratings (see p. 242, ***SRII,*** for computing Power for plastic explosives). The explosion destroys the vehicle and inflicts explosive damage on the would-be intruder—as well as on passengers, cargo and anyone passing by.

For damage to the vehicle's passengers, cargo, and bystanders in the immediate vicinity, reduce the damage Power Level by the Vehicle's Body or Armor Rating, whichever is higher. For a more powerful effect, the player installing the system can make a Demolitions (4) Test during installation. If the test succeeds, reduce by half the Body or Armor Rating for this calculation. In any case, the damage Power Level drops by 1 for each meter of distance from the vehicle.

> *"Nine-Fingers" Ned is trying to break into a Mitsubishi Nightsky protected by an anti-theft system. Unfortunately, he botches the attempt (how do you think he got the tag "Nine-Fingers"?) and triggers the limousine's alarm system. The system detonates a charge of Compound IV.*
>
> *The Nightsky has a Body Rating 4, so the blast must have a minimum Power equal to 4^2, or 16, to destroy the vehicle (along with the would-be thief). Unfortunately for Ned, the limousine's been packed with 9 kilograms of Compound IV, which gives it a Power Level of 18. (See the plastic explosive rules, p. 242 of* ***SRII,*** *to determine the Power Level of plastic explosives.)*
>
> *The Power Level is reduced by the vehicle's Body or Armor, whichever is higher. In this case, that happens to be the Nightsky's Body, so the explosion does 14D damage (18 – 4 = 14).*
>
> *Predictably, Ned fails to resist the damage and gets his brains splattered against a nearby wall (thus saving the Nightsky's oyabun owner the trouble of doing the job himself).*

If the vehicle is packed with less than the minimum charge required to destroy it, the explosion merely damages the vehicle. If more than half but less than the full minimum is used, the blast causes Serious Damage. If less than half is used, the blast causes Moderate Damage. In either case, the explosion causes damage to passengers, cargo and bystanders.

Design Specifications
Design Cost:
- **Ratings 1–3:** 1 point per rating
- **Ratings 4–6:** 4 points per rating
- **Ratings 7–9:** 10 points per rating
- **Ratings 10+:** 50 points per rating
- **Standard Shock System:** +20 points

Maximum Rating: 10, or gamemaster's discretion
CF Consumed: 0
Load Reduction: 0 kg
Customization Specifications
Parts Cost:
- **Ratings 1–3:** 100¥ per rating
- **Ratings 4–6:** 400¥ per rating
- **Ratings 7–9:** 1,000¥ per rating
- **Ratings 10+:** 5,000¥ per rating
- **Standard Shock System:** +2,000¥

Parts Availability: 3/6 days (1–3), 4/7 days (4–6), 5/10 days (7–9), 6/14 days (10+)
Street Index: 1 (1–3), 1.25 (4–6), 1.5 (7–9), 2 (10+)
Maximum Rating: 10, or gamemaster's discretion
Base Time: 40 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Bench Seats

Bench seats are popular in compact vehicles or other vehicles in which space is at a premium. A single bench seat can accommodate one and a half human-sized passengers, or 225 kilograms. Two bench seats side by side can hold three passengers, or 450 kilograms.

Removing a bench seat frees up 6 CF and increases the Load Rating by 150 kilograms (the seat doesn't weigh 150 kilograms, but the Load increase reflects the fact that the vehicle now carries fewer passengers and thus has more power free for hauling cargo).

Bench seats may also be armored (see **Bucket Seats**), but such armor protects against attacks from the rear only. Each point of Armor costs 1,250 nuyen (during customization) or 12 Design Points (in addition to the cost of the seats) when designing the vehicle. Up to 2 points of Armor may be installed on a bench seat. Bench seats are not available for motorcycles.

If an oversized metahuman attempts to sit in a standard seat, he will crush the seat and mangle its padding. During vehicle combat, that metahuman must resist 4L damage each turn. Additionally, he gains a +2 modifier when making Resistance Tests against collision damage (see **Colliding with Objects,** p. 52). Metahumans may use reinforced bench seats without penalty (see **Reinforced Bench Seats,** below).

Folding Bench Seats

Folding bench seats are common in vehicles such as limousines, to provide extra seating for lackeys and the like when needed, or in station wagons. Four CF are freed up for cargo (weighing up to 150 kilograms) when a folding bench seat is folded.

Reinforced Bench Seats

Reinforced bench seats are designed to support the weight of trolls and other large metahumans. A reinforced bench seat can hold up to 300 kilograms.

When replacing a standard bench seat with a reinforced one, the vehicle's current Load Rating must be able to accommodate the additional weight of the reinforced seat.

Bucket Seats

A bucket seat holds a single person in greater comfort than a standard bench seat. Removing a bucket seat frees up 6 CF and increases a vehicle's Load Rating by 100 kg (the seat doesn't weigh 100 kilograms, but the Load increase reflects the fact that the vehicle now carries one less 100-kilogram passenger).

Bucket seats may be armored to provide protection from weapons fire. Each point of armor acts as ballistic or impact armor against any rear or side attacks directed against the passenger while he is in the vehicle. Each point of armor costs 1,250 nuyen or 12 additional Design Points. Up to 2 points of armor may be installed.

If an oversized metahuman attempts to sit in a standard seat, he will crush the seat and mangle its padding. During vehicle combat, that metahuman must resist 4L damage each turn. Additionally, he gains a +2 modifier when making Resistance Tests against collision damage (see **Colliding with Objects,** p. 52). Metahumans may use reinforced bucket seats without penalty (see **Reinforced Bucket Seats,** below).

Reinforced Bucket Seats

Reinforced bucket seats are designed to support the weight of large orks, trolls and other large metahumans. A reinforced bucket seat can hold up to 250 kilograms. Sturdier seats are also available, but they cost an additional 100 nuyen for every additional 25 kilograms of support capacity.

When replacing a standard bucket seat with a reinforced one, the vehicle's current Load Rating must be able to accommodate the additional weight of the reinforced seat.

Ejection Bucket Seats

The ejection bucket seat is a standard or armored bucket seat fitted with a small solid-fuel rocket and rudimentary stabilization systems. Ejection-activation controls may be included on or near the seat (or elsewhere) at the time of installation. The seat includes a para-sail that deploys on ejection and brings the chair and occupant safely to the ground, assuming the occupant is securely strapped in. The cost of the seat and the CF Consumed include the necessary jettison-capable panels that allow the seat to be fired clear.

Reinforced ejection bucket seats are also available for large orks, trolls and other large metahumans. Double the appropriate costs for reinforced ejection seats.

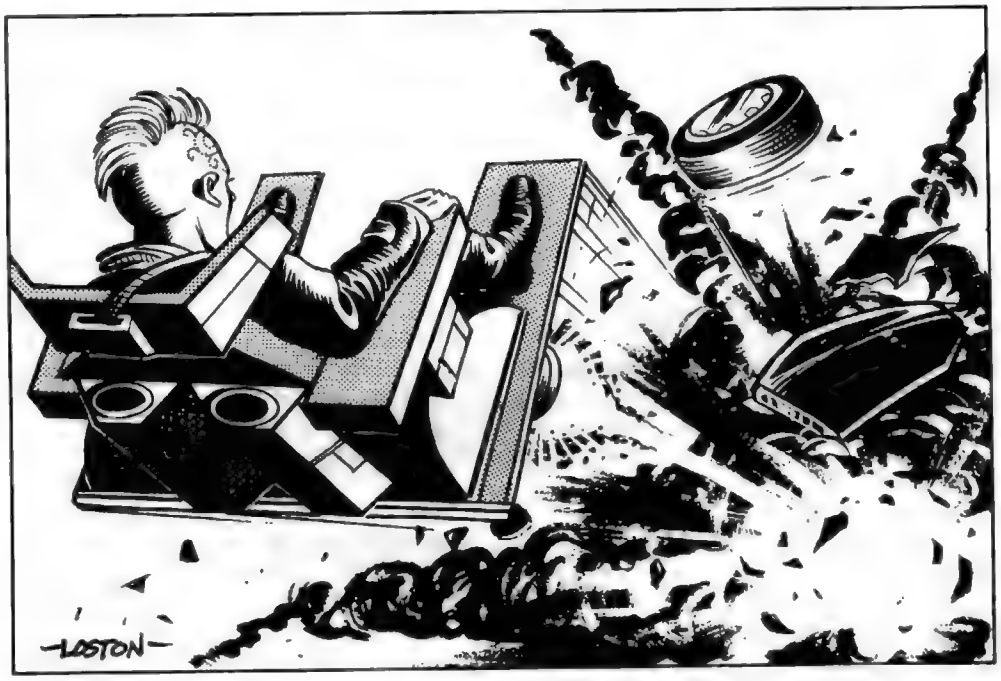
Design Specifications
Cost:
Standard Bucket Seat: 35 points
Reinforced Bucket Seat: 70 points
CF Consumed: 6 CF
Load Reduction
Standard Bucket Seat: 100 kg
Reinforced Bucket Seat: 250+ kg

Customization Specifications
Parts Cost:
Standard Bucket Seat: 3,000¥
Reinforced Bucket Seat: 6,000¥
Parts Availability: 5/10 days
Street Index: 2
Base Time: 16 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 7
Load Reduction:
Standard Bucket Seat: 110 kg
Reinforced Bucket Seat: 260+ kg

Existing Vehicles Adjusted for Metahumans

All of the vehicles listed in the **Vehicle List** (p. 148) are also available in metahuman-adjusted variants, which replace all standard seats with reinforced seating. To calculate the cost of a reinforced-seat model, count the number of bench and bucket seats in the vehicle. Multiply the number of seats by 1,200 nuyen and add this amount to the cost of the vehicle. (Yes, this gives a higher cost than simply replacing the regular seats with the reinforced seats. But remember that the manufacturer is also adjusting the performance of the vehicle to compensate for the heavier-than-normal driver and passengers.)

This package deal also includes size adjustment of manual controls, if necessary. Metahuman-adjusted vehicles may be harder to obtain, more expensive or simply unavailable in areas unfriendly to metahumans.



Design Specifications
Design Cost:
Standard Bench/Bucket Seat: 0 points
Folding Bench Seat: 0 points
Reinforced Bench/Bucket Seat: 5 points
Maximum Rating: NA
CF Consumed:
Standard Bench/Bucket Seat: 6
Folding Bench Seat: 6
Reinforced Bench/Bucket Seat: 8
Load Reduction:
Standard Bench/Bucket Seat: 150 kg
Reinforced Bench Seat: 300 kg
Reinforced Bucket Seat: 250+ kg

Customization Specifications
Parts Cost:
Standard Bench Seat: 750¥
Folding Bench Seat: 750¥
Reinforced Bench Seat: 1,500¥
Standard Bucket Seat: 700¥
Reinforced Bucket Seat: 1,500¥, plus an additional 100¥ for every 25 kilograms of support capacity above 250
Parts Availability: 3/48 hours
Street Index: 1
Maximum Rating: NA
Base Time: 4 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle shop
CF Consumed:
Standard Bench/Bucket Seat: 6
Folding Bench Seat: 6
Reinforced Bucket Seat: 8
Load Reduction
Standard Bench/Bucket Seat: 100 kg
Reinforced Bench Seat: 300 kg
Reinforced Bucket Seat: 250+ kg

Convertible Tops

"Rag-top" conversions are available for vehicles that normally come with hard tops and do not have gull-wing or canopy access. The conversion replaces the hard-top roof with a folding canopy that can be extended or retracted on command. If a roll bar is not installed, double the target number for any passenger Damage Resistance Test following a crash. Rag-tops do not provide vehicle protection to passengers from side, rear or top attacks.

Design Specifications
Design Cost: 0 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: Multiply the vehicle cost by .1 and then add 2,500 nuyen
Parts Availability: 4/72 hours
Street Index: 1
Maximum Rating: NA
Base Time: 24 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle shop
CF Consumed: 0
Load Reduction: 0 kg

Cranes

A crane is a hydraulic-powered mechanical boom capable of lifting heavy loads. To use a crane, the vehicle must be stationary and immobilized with the supplied chocks. Cranes are not available for vehicles with Body Ratings of 0.

A crane has its own Load Rating, which denotes how many kilograms of weight it can lift. The maximum Load Rating for a crane is based on the vehicle's Body, as shown on the Crane Capacity Table. If desired, players can install cranes with Load Ratings lower than the maximum allowed for the vehicle.

If a vehicle uses its crane to pull or tow an object while moving (for example, a tow truck towing an automobile), the towing maximum is determined by the vehicle's or crane's Load Rating, whichever is lower.

For more information on lifting and towing, see **Lifting and Pulling Objects** (p. 33).

Design Specifications
Design Cost: Crane's Load Rating x 2 points
Maximum Rating: See Crane table
CF Consumed: 15
Load Reduction: Body x 80 kg

Customization Specifications
Parts Cost: Crane's Load Rating x 100¥
Parts Availability: 6/14 days
Street Index: 2
Maximum Rating: See Crane table
Base Time: Body x 16 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 35
Load Reduction: Body x 80 kg

Drone Racks

Drone racks are used to launch airborne drones from moving vehicles. The rack is a hardware cradle that holds the drone, moves it into launch position and then releases it. Drone racks can also be used to recover launched drones while the vehicle is moving.

CRANE CAPACITY TABLE

Vehicle Body Rating	Maximum Crane Load Rating/Lifting Capacity
1	25 kg
2	200 kg
3	750 kg
4	2,000 kg
5	5,000 kg
6	20,000 kg
7	30,000 kg
8	45,000 kg
9	60,000 kg
10+	Body x Body x 750 kg

Launching a drone from a drone rack requires two separate actions, the first to activate the drone rack and the second to launch the drone. The drone is then considered to be moving at either the current speed of the vehicle or the drone's stall speed, whichever is greater. Rotorcraft drones launched from stationary vehicles launch in hover mode.

Recovering a launched drone requires a successful Handling Test by the driver of the recovering vehicle and a Free Action. At the same time, the drone's controller must make a Handling Test. If either test fails, the drone has not been recovered. If both tests fail, the drone crashes into the vehicle.

The drone rack also serves as an enclosed mini-hangar that protects drones stored inside it. A drone rack has the same Armor Rating as the vehicle on which it is mounted, but only one-half the vehicle's Body (round down.)

Design Specifications
Design Cost: Body x 12 points
Maximum Rating: NA
CF Consumed: Amount of CF needed to store the drone
Load Reduction: 45 kg

Customization Specifications
Parts Cost: Multiply the vehicle cost by .1 and then add 2,500 nuyen
Parts Availability: 4/96 hours
Street Index: 2
Maximum Rating: NA
Base Time: 8 hours per Body Point
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: Amount of CF needed to store the drone + 2 CF
Load Reduction: 45 kg

External Cargo Mounts

External cargo mounts include accessories such as roof racks and externally mounted side cargo-boxes on motorcycles. External cargo mounts require no CF allocation, but when the cargo mount is loaded the vehicle's Handling Rating increases by 1. The maximum cargo capacity of a vehicle's external mounts is equal to the vehicle's original internal cargo capacity.

This modification may not be added during the design process.

Customization Specifications
Parts Cost: 250 nuyen per CF that the mount will hold
Parts Availability: 3/24 hours
Street Index: 1
Maximum Rating: Original internal cargo space
Base Time: 8 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 2
Equipment Needed: Vehicle shop
CF Consumed: 0
Load Reduction: 0 kg

Floatation Packages (Aircraft)

Any aircraft or helicopter may be fitted with floats for amphibious operations. Adding floats to an aircraft increases the aircraft's Economy by the initial Economy multiplied by 1.20. Additionally, the floats reduce the aircraft's Speed by half. And of course, an aircraft fitted with floats cannot touch down on land.

Floats also reduce the Speed Ratings of helicopters. To determine the reduced Speed of a float-equipped helicopter, multiply the helicopter's initial Speed Rating by .9 and round down. The product is the helicopter's new Speed Rating. Float-equipped helicopters can still touch down on land, however.

Design Specifications
Design Cost: Multiply the chassis Point Value by 1.20
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: Multiply the vehicle cost by .1 and then add 2,500 nuyen
Parts Availability: 4/7 days
Street Index: 2
Maximum Rating: NA

Base Time: 32 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 100 kg

Hovercraft Water Seals

Normally, a hovercraft that loses power while on a body of water will sink within 30 minutes. However, a hovercraft water seal makes a hovercraft's chassis watertight and enables the craft to float, a useful capability if the engine fails, is deliberately turned off or destroyed while the vehicle is moving over water.

Design Specifications
Design Cost: Body x 5 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: Body x 500¥
Parts Availability: 4/96 hours
Street Index: 1
Maximum Rating: NA
Base Time: 32 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle facility
CF Consumed: 0
Load Reduction: 0 kg

Mechanical Arms

Articulated mechanical arms are not as strong as cranes, but they possess superior dexterity. In fact, a mechanical arm can do the same things a metahuman arm can and then some.

Every mechanical arm has a Strength Rating, which is equal to the vehicle's Body Rating squared. (For example, an arm fitted to a vehicle with a Body Rating 1 would have a starting Strength of 1, an arm on a Body 2 vehicle would have a starting Strength of 4, an arm on a Body 3 vehicle would have a starting Strength of 9 and so on.) A mechanical arm can lift a number of kilograms equal to its Strength Rating multiplied by 50.

An arm's Strength Rating may be increased by purchasing additional Strength enhancement. Note that increasing the Strength of an arm also increases its Load reduction, which limits the amount of Strength enhancement a mechanical arm can take. The Strength Rating of a limb can *never* increase beyond ten times the Body Rating of the vehicle to which it is attached.

Mechanical arms can sport any accessory or feature available on cyberarms except for the limb enhancements described in the **Cybertechnology** sourcebook. A limb accessory for a mechanical arm costs half as much as the standard cyberarm version of the accessory, but has the same Availability and Street Index ratings as the standard version.

Design Specifications
Design Cost: Body x 250 points
Strength Enhancement (1–3 points): 8,000 Design Points per point of enhancement
Strength Enhancement (4+ points): 10,000 Design Points per point of enhancement
Maximum Rating: NA
CF Consumed: 2
Load Reduction: Strength x 25 kg

Customization Specifications
Parts Cost: Body x 25,000¥
Strength Enhancement (1–3 points): 75,000¥/point
Strength Enhancement (4+ points): 90,000¥/point
Parts Availability: 4/4 days
Street Index: 1
Maximum Rating: NA
Base Time: 40 hours
Skill: Cybertechnology B/R
Target Number: 6
Equipment Needed: Vehicle facility
CF Consumed: 4
Load Reduction: Strength x 25 kg

Sidecars

Motorcycle sidecars come in three sizes: small, medium and large. The Sidecar Table shows the costs and benefits of adding a sidecar to a vehicle.

The cargo capacity for each sidecar does not include seating, which must be taken out of the sidecar's CF capacity (for example, a small sidecar can accommodate one bucket seat, but it takes up all of the sidecar's CF). A motorcycle's Load Rating does not change with the installation of a sidecar, so characters will have to be careful not to overload the sidecar with excessive weight.

A sidecar reduces the cycle's Speed by 15, increases its Handling Rating by the appropriate modifier and decreases its Economy by 10 percent. (To calculate the new Economy, simply multiply the initial Economy Rating by .9.) A sidecar has the same Body Rating as the vehicle on which it is mounted. Sidecar armor may be increased in accordance with the standard vehicle modification rules (p. 127).

Installing or removing a sidecar requires 15 minutes.

Spotlights

A spotlight projects a concentrated beam of light. It has an effective range of 600 meters, with a beam diameter of 0.5 meters at the point of origin and 5 meters at maximum range. The beam diameter increases in proportion to the range, so the diameter of the spotlight at 300 meters would be 300/600 x (0.5 + 5), or 2.75 meters.

In addition to standard white-light spotlights, spotlights are also available in medium-range infrared, which is invisible to the

SIDECAR TABLE

Size	Cargo	Handling Modifier	Design Cost	Customization Cost
Small	4 CF	+1	10 points	1,000¥
Medium	8 CF	+1	20 points	2,000¥
Large	12 CF	+2	35 points	3,500¥

unaugmented human eye but illuminates areas for low-light and thermographic imaging systems. Spotlights may be controlled manually or remotely operated from inside a vehicle.

Design Specifications
Design Cost: 6 points
Maximum Rating: NA
CF Consumed: 0
Load Reduction: 0 kg

Customization Specifications
Parts Cost: 600¥
Parts Availability: 4/96 hours
Street Index: 1.5
Maximum Rating: NA
Base Time: 1 day
Skill: Appropriate Vehicle B/R Skill
Target Number: 3
Equipment Needed: Vehicle shop
CF Consumed: 0
Load Reduction: 0 kg

Tires

A number of different tire types are available. All require a standard tool kit to install. Spare tires take up a number of CF equal to one-half the Body of the vehicle, rounded down.

All vehicles are fitted with appropriate tires at the time of manufacture for no extra cost. Characters need only pay tire costs if they request special tires during vehicle design or replace or add tires as vehicle customizations.

Standard tires are regular, run-of-the-mill tires. For vehicles using these tires, reduce by half (round down) the effects of any suspension or Handling modifications. Cost = Body x 50¥ each.

Performance tires are required for use with improved suspension and drive-by-wire systems. They also negate the effects of off-road or active suspensions in off-road mode. Cost = Body x 75¥ each.

Off-road tires are required for use with off-road suspensions or active suspensions in off-road mode. With all other types of suspensions, they behave as standard tires (i.e., they negate the benefits of improved suspension and drive-by-wire improvements during on-road operation). Cost = Body x 125¥ each.

Dual-Purpose tires are designed for use with active suspensions, allowing vehicles to operate both off-road and on-road without penalty. These tires act like standard tires with regard to improved and high-speed suspensions. Assume that any vehicle with improved suspension or a drive-by-wire system is also equipped with dual-purpose tires. Cost = Body x 250¥ each.

Runflat versions of all the aforementioned tire types are available. A runflat tire has the equivalent protection of an armored vest (5/3). Cost = tire cost + 200¥ each.

Winches

Winches are attached to the bumpers of ground vehicles and can pull and tow heavy loads.

A winch has its own Load Rating/weight capacity, which determines how much weight the winch can pull, tow or lift. The maximum Load Rating for a winch is based on the vehicle's Body, as shown on the Winch Capacity Table. If desired, players can select winches with Load Ratings lower than the maximum for their vehicle's Body Ratings.

If a vehicle uses its winch to pull or tow an object while moving (for example, a tow truck towing an automobile), the towing maximum is determined by the vehicle's or winch's Load Rating, whichever is lower.

A vehicle can also use a winch to pull itself across normally impassable terrain, such as up a vertical cliff face. The vehicle must not be loaded over its Load Rating when doing so, however. The winch pulls the vehicle at a speed of 1 meter per turn. The vehicle cannot perform any other actions while the winch is working.

For more information on lifting and towing, see **Lifting and Pulling Objects** (p. 33).

Design Specifications
Design Cost: Winch's Load Rating x 1 point
Maximum Rating: See Winch table
CF Consumed: 0
Load Reduction: Body x 2.5 kg

Customization Specifications
Parts Cost: Winch's Load Rating x 75¥
Parts Availability: 6/14 days
Street Index: 2
Maximum Rating: See Winch table
Base Time: Body x 16 hours
Skill: Appropriate Vehicle B/R Skill
Target Number: 4
Equipment Needed: Vehicle facility
CF Consumed: 1
Load Reduction: Body x 2.5 kg

GAMEMASTER APPROVAL OF VEHICLES

The revised vehicle design and customization rules were designed to provide players with as much flexibility as possible when creating vehicles. This flexibility gives players enormous freedom to exercise their imaginations, but it also enables them to misuse the system. To prevent such misuse, the gamemaster has the right to approve, modify or disallow any new vehicle.

Ideally, vehicle design should be a cooperative process between the player and the gamemaster, with a little give-and-take on both sides. If a player has a really creative, solid and well-

WINCH CAPACITY TABLE

Vehicle's Body Rating	Maximum Winch Load Rating/Weight Capacity
0	5 kg
1	25 kg
2	200 kg
3	750 kg
4	2,000 kg
5	5,000 kg
6	20,000 kg
7	30,000 kg
8	45,000 kg
9	60,000 kg
10+	Body x Body x 750 kg

thought-out idea, the gamemaster should respect the player's efforts and let him run with it. At the same time, the gamemaster also has the responsibility to keep the game balanced, entertaining and challenging—and players should respect that.

If a player creates a vehicle that threatens the balance of the game or gives an unfair advantage (either to the player character or the NPCs), the gamemaster has several options. For example, the gamemaster has the final say over the final vehicle cost, so by sufficiently raising the cost he can limit the vehicle's use in the game. Alternatively, the gamemaster can change any of the vehicle's ratings, features, design options and modifications, or even veto proposed design options and vehicle modifications. And as a last resort, the gamemaster can simply prohibit the player from introducing the vehicle into the game.

CONVERTING EXISTING VEHICLES

The **Rigger II** sourcebook is a complete overhaul of the entire vehicle system. It changes the elementary definitions of several vehicle ratings, deletes a few old ratings and introduces several new ratings. Consequently, no simple method exists for translating the game statistics of previously published or player-designed vehicles to the new system.

The **Vehicle List** (p. 148) provides new game statistics for all vehicles published in previous FASA products. The new statistics re-create the original vehicles as faithfully as possible: they were retrofitted to account for Design Points and Mark-Up Factors, but the final vehicle prices may not precisely reflect a new vehicle built using this system. The final vehicle prices for existing vehicles are, however, balanced in the game and balanced against the prices of new vehicles built using the Vehicle Design and Customization system. Gamemasters may adjust these prices up or down to suit their own game, but the prices given here should be considered the official costs of these vehicles.

As far as player-designed vehicles and "home-brew" inventions are concerned, we recommend that players re-design these vehicles using the vehicle-design rules in this section. When re-designing vehicles, players should keep the following principles in mind.

First, Body Ratings are fixed and cannot be changed, either during vehicle design or vehicle customization. A vehicle's Body Rating is linked to the vehicle's weight, and the rating system uses a scale of 1 to 10 to cover vehicles ranging in size from a toaster-sized drone to a sixty-ton main battle tank. Therefore, Body Ratings of vehicles of the same type should never differ significantly.

Second, remember that Design Points are used to purchase design options and modifications during the vehicle design process. Once the character has purchased the vehicle (either during character creation or later in the adventure), additional modifications must be made as vehicle customizations and paid for with nuyen, not Design Points. Also, the specifications of a modification may differ depending on whether the modification is incorporated during vehicle design or installed later as a vehicle customization. These specifications are noted in the descriptions of each modification.

The final price of a vehicle is determined by multiplying the Design Points by the Mark-Up Factor. Gamemasters are free to "fudge" the Mark-Up Factor in either direction, in the interest of adding variety to their games and preventing their campaigns from degenerating into vehicle "powergaming."

VEHICLE LIST

VEHICLE LIST KEY

(See **Standard Vehicle Operations,** p. 22, for explanations of all other terms.)
Entry Points: See Chassis Table, p. 170.
Point Value: The Design Point Value of the base model with options listed.
Template: The chassis or power plant template used to create the vehicle.
Cost: See **Vehicle Design and Customization,** p. 147.

Reference:
R2 = Rigger 2
RBB1 = Rigger Black Book
CS = Corporate Security Handbook
FF = Fields of Fire
NAGRL = Neo-Anarchists' Guide to Real Life
SRII = Shadowrun, Second Edition
LS = Lone Star

AERODESIGN SYSTEMS CONDOR SERIES

The Condor lighter-than-air drones are ideal extended-reconnaissance platforms.

	Handling	Speed	Accel	Body	Armor	Sig
LDSD-41	4	90	5	2	3	10
LDSD-23	4	60	3	2	0	10
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
LDSD-41	—	3	1	3	50	
LDSD-23	—	1	1	1	50	

Seating: None
Entry Points: NA
Fuel: Electric (25 PF)
Point Value: 719/133
Template: Mini-blimp
Setup/Breakdown: 5 minutes/3 minutes
Landing/Takeoff: VTOL
Economy: 5 km/PF (Idle: 2 hours/PF)
Cost: 36,000¥/3,325¥
Reference: R2
Other Features: Remote control interface, rigger adaptation, SunCell (LDSD-23)

AEROQUIP "REDBALL EXPRESS" LONG-RANGE RESUPPLY DRONE

The Redball is a large drone designed for transporting supplies and equipment.

Handling	Speed	Accel	Body	Armor	Sig
4	60/300	35	3	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	3	16	150	

Seating: None
Entry Points: NA
Fuel: Jet (250 liters)
Point Value: 1,003
Template: Special
Setup/Breakdown: None
Landing/Takeoff: VTOL
Economy: .25 km/liter (Idle: 5 minutes/liter)
Cost: 25,000¥
Reference: R2
Other Features: Remote control interface, rigger adaptation

AGUSTA-CIERVA PLUTOCRAT

This luxury rotorcraft is available in both armed and unarmed variants.

	Handling	Speed	Accel	Body	Armor	Sig
Standard	4	290	17	4	2	2
Armed	4	290	17	4	2	2
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Standard	4	—	1	15	240	
Armed	4	—	1	8	140	

Seating: 2 folding bucket, 2 reinforced bench (x2)
Entry Points: 2 + 2
Fuel: Jet (1,500 liters)
Point Value: 1,250/1,500
Template: Luxury supercharged utility
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.1 km/liter
Cost: 781,000¥/938,000¥
Reference: RBB1
Other Features: Luxury accomodations, satellite uplink via electronics port (both), small turret (armed only)

AIRSHIP INDUSTRIES SKYSWIMMER

This recreational solar-powered, lighter-than-air vehicle can fly for an unlimited time, weather permitting.

Handling	Speed	Accel	Body	Armor	Sig
3	100	2	8	1	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	30	750	

Seating: 2 bucket, 4 bench
Entry Points: 2 + 2
Fuel: Electric (1,000 PF)
Point Value: 2,362
Template: Zepplin
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.25 km/PF
Cost: 590,000¥
Reference: RBB1

ARES ARMS SENTRY II

The Sentry II can be used with any remote control network or as part of a BattleTac IVIS drone network.

Handling	Speed	Accel	Body	Armor	Sig
3	0	0	2	0	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	4	4	1	250	

Seating: None
Entry Points: NA
Fuel: Electric (12 PF)
Point Value: 1,850
Template: Special
Setup/Breakdown: 2 minutes
Landing/Takeoff: NA
Economy: NA (Idle: 1 hour/PF)
Cost: 30,000¥
Reference: R2
Other Features: Micro-turret with anti-aircraft capability (weapon not included), remote control interface, rigger adaptation

ARES CITYMASTER

The Citymaster urban riot-control vehicle functions as a mobile command post.

Handling	Speed	Accel	Body	Armor	Sig
5/11	120	3	5	10	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	0	17	525	

Seating: 2 bucket + 2 folding bench (x5)
Entry Points: 2 + 1 rear
Fuel: Diesel (250 liters)
Point Value: 1,940
Template: Armored heavy transport
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5.2 km/liter
Cost: 582,000¥
Reference: SRII
Other Features: Enviroseal (gas), life support (20 man-hours), small turret (weapon not included)

ARES DRAGON

This solid-built, versatile helicopter can be fitted with extra cargo containers.

Handling	Speed	Accel	Body	Armor	Sig
5	260	10	7	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	5/90	3,250	

Seating: 3 bucket (2 front, 1 rear)
Entry Points: 2 + 1
Fuel: Jet (4,500 liters)
Point Value: 2,355
Template: Cargo
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.2 km/liter
Cost: 589,000¥
Reference: SRII

ARES GUARDIAN™ DRONE

This vectored-thrust drone is small enough for indoor use yet sturdy enough for outdoor applications.

Handling	Speed	Accel	Body	Armor	Sig
5	60	6	2	12	8
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	3	4	1	20	

Seating: None
Entry Points: NA
Fuel: Electric (150 PF)
Point Value: 3,020
Template: Sm.-Vectored Thrust UAV
Other Features: Mini-turret (weapons not included), remote control interface, rigger adaptation
Setup/Breakdown: None
Landing/Takeoff: VTOL
Economy: 1 km/PF (Idle: min/PF)
Cost: 227,000¥
Reference: CS

ARES MOBMASTER

The latest in urban security vehicles, the Mobmaster is available in Personnel-Carrier and Command-and-Control models.

Handling	Speed	Accel	Body	Armor	Sig
6/12	120	3	5	14	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	0	16	550	

Seating: 2 bucket + 2 folding bench (x5)
Entry Points: 2 + 1 rear
Fuel: Diesel (250 liters)
Point Value: 2,650
Template: Armored heavy transport
Other Features: Enviroseal (gas), life support (30 man-hours), small turret (weapon not included)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5.2 km/liter
Cost: 795,000¥
Reference: RBB1

ARES ROADMASTER

This large, trucklike cargo transport can become a security vehicle with just a few transplants of easily interchangeable parts.

Handling	Speed	Accel	Body	Armor	Sig
4/10	90	3	5	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	80	2,000	

Seating: 2 bucket, 1 folding bench
Entry Points: 2 + 1T
Fuel: Diesel (250 liters)
Point Value: 450
Template: Medium transport
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5.2 km/liter
Cost: 45,000¥
Reference: RBB1

ARES SENTINEL "P" SERIES DRONE

The Sentinel "P" series is a semi-mobile, fixed-circuit perimeter patrol drone.

Handling	Speed	Accel	Body	Armor	Sig
5	10	1	1	12	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	3	4	1	20	

Seating: NA
Entry Points: NA
Fuel: Electric (2 PF)
Point Value: 1,546
Template: Special
Other Features: Modified Gridlink, micro-turret (weapon not included), remote control interface, rigger adaptation
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 1 km/PF (Idle: 1 hour/PF)
Cost: 50,000¥
Reference: CS

ARES TR-55C CARGOLINER

The extra-rugged tilt-wing TR-55C Cargoliner is ideal for delivering cargo to hard-to-reach places.

Handling	Speed	Accel	Body	Armor	Sig
5	320	12	6	5	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	24	100	

Seating: 2 bucket + 2 folding bench (x6)
Entry Points: 1 + 1
Fuel: Jet (1,600 liters)
Point Value: 1,690
Template: Tilt-wing
Other Features: VTOL capability
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.6 km/liter
Cost: 845,000¥
Reference: CS

ARES TR-55E "PRESIDENT'S EDITION" EXECUTIVE

The TR-55E "President's Edition" aircraft is a popular transportation choice for executives.

Handling	Speed	Accel	Body	Armor	Sig
5	350	12	6	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	25	500	

Seating: 2 bucket + 3 bucket (x3)
Entry Points: 1 + 1
Fuel: Jet (1,520 liters)
Point Value: 1,247
Template: Tilt-wing
Other Features: VTOL capability, luxury accommodations
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.6 km/liter
Cost: 624,000¥
Reference: CS

ARES TR-55T TRAVELLER

The TR-55T is the most popular version of the TR-55 VTOL line.

Handling	Speed	Accel	Body	Armor	Sig
5	350	12	6	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	12	500	

Seating: 2 bucket + 3 bucket (x4)
Entry Points: 1 + 1
Fuel: Jet (1,600 liters)
Point Value: 1,450
Template: Tilt-wing
Other Features: VTOL capability
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.6 km/liter
Cost: 363,000¥
Reference: CS

ARTEMIS INDUSTRIES NIGHTGLIDER

This medium-weight glider features an electric turbofan engine, non-reflective mesh skin and a 400-kg payload capacity.

Handling	Speed	Accel	Body	Armor	Sig
3	60	4	2	0	9
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	4	100	

Seating: 1 bucket
Entry Points: Open
Fuel: Electric (100 PF)
Point Value: 415
Template: Ultralight
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: STOL
Economy: 0.25 km/PF
Cost: 41,500¥
Reference: FF

AZTECH GCR-23C CRAWLER

The GCR-23C is a small tracked drone designed to operate as a remote snooper in rough and urban terrain.

Handling	Speed	Accel	Body	Armor	Sig
4/4	15	3	1	0	8
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	1	0.5	15	

Seating: NA
Entry Points: NA
Fuel: Electric (180 PF)
Point Value: 104
Template: Medium tracked crawler
Other Features: Remote control interface, rigger adaptation
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 0.75 km/PF (Idle min/PF)
Cost: 1,050¥
Reference: R2

AZTECH NIGHTRUNNER

This small boat's composite hull and non-reflective paint reduce its heat signature, making it difficult to detect.

	Handling	Speed	Accel	Body	Armor	Sig
Standard	3	75	8	3	0	4
Electric	3	45	5	3	0	5
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Standard	3	—	0	14	250	
Electric	3	—	0	14	250	

Seating: 2 bucket
Entry Points: o
Fuel: Methane, 250 bars/ Electric, 150 PF
Point Value: 300
Template: Skiff
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 1 km per bar/0.5 km per PF
Cost: 30,000¥
Reference: SRII

AZTECHNOLOGY AGUILAR-EX

The Aguilar-EX attack helicopter is Aztechnology's most advanced VTOL weapons platform.

Handling	Speed	Accel	Body	Armor	Sig
4	350 (75)	27	5	5	5 (7)
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	7	2	1,565	

Seating: 1 bucket + 1 bucket
Entry Points: 1 + 1
Fuel: Jet/Electric (1,500 liters/ 500 PF)
Point Value: 8,326
Template: Attack helicopter
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.1 km/liter (0.1 km/PF)
Cost: 6,250,000¥
Reference: RBB1
Other Features: ECM 6, ECCM 7, external fixed hardpoint (weapon not included), 5 external missile mounts (1,500 kg total ordnance weight), radar absorbent material 2 (factored in)

AZTECHNOLOGY HALCÓN GROUND-ATTACK AIRCRAFT

The Halcón ground-attack fighter was designed as a "tank killer."

Handling	Speed	Accel	Body	Armor	Sig
4	150/1,800	80	7	12	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	9	3	2,605	

Seating: 1 ejection
Entry Points: 1
Fuel: Jet (2,500 liters)
Point Value: 79,764
Template: Jet fighter
Other Features: ECM 9, ECCM 9, enviroseal (gas), 2 external fixed hardpoints (weapons not included), 7 external missile mounts (2,100 kg total ordnance weight)
Setup/Breakdown: NA
Landing/Takeoff: Standard
Economy: 0.1 km/liter
Cost: 59,800,000¥
Reference: Aztlan

AZTECHNOLOGY HEDGEHOG SIGNAL INTERCEPTOR

The Hedgehog drone identifies opposing command, control, communications and intelligence (C^3I) transmitters.

Handling	Speed	Accel	Body	Armor	Sig
4/4	15	3	1	0	8
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	4	0	15	

Seating: NA
Entry Points: NA
Fuel: Electric (180 PF)
Point Value: 5,554
Template: Med. tracked crawler
Other Features: Remote control interface, rigger adaptation, Rigger Decryption Unit (4), Rigger Protocol Emulation Module (4)
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 0.75 km/PF (Idle: 2 min/PF)
Cost: 55,000¥
Reference: R2

AZTECHNOLOGY LIEBRE SURVEILLANCE/PURSUIT RPV

This fixed-wing drone features advanced sensors.

Handling	Speed	Accel	Body	Armor	Sig
3	120/1,800	75	3	4	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	4	4	5	25	

Seating: None
Entry Points: NA
Fuel: Jet (160 liters)
Point Value: 5,605
Template: Large fixed-wing UAV
Other Features: External fixed hardpoint (with Vanquisher minigun and 1,000 rounds ammo), remote control interface, rigger adaptation
Setup/Breakdown: 10 minutes
Landing/Takeoff: STOL
Economy: .5 km/liter
Cost: 420,000¥
Reference: Aztlan

AZTECHNOLOGY LOBO MEDIUM SCOUT LAV

This scout vehicle packs enough firepower to rival some light battle tanks.

Handling	Speed	Accel	Body	Armor	Sig
3	250/850	35	6	21	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	7	25	800	

Seating: 1 ejection + 2 ejection
Entry Points: 3h + 1h
Fuel: Jet (7,500 liters)
Point Value: 11,100
Template: Thunderbird
Other Features: ECM 6, ECCM 5, medium turret (weapons not included)
Setup/Breakdown: NA
Landing/Takeoff: VSTOL
Economy: 0.05 km/liter
Cost: 8,320,000¥
Reference: Aztlan

AZTECHNOLOGY TIBURÓN PATROL BOAT

The 15-meter Tiburón is a patrol boat designed for stealth missions.

Handling	Speed	Accel	Body	Armor	Sig
3	90	5	5	4	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	7	20	502	

Seating: 2 bucket + 1 bench
Entry Points: 0
Fuel: Diesel (500 liters)
Point Value: 8,006
Template: Armed sport cruiser
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 2,400,000¥
Reference: Aztlan
Other Features: ECM 5, ECCM 5, 2 mini-turrets (weapons not included)

AZTECHNOLOGY TIBURÓN PATROL BOAT (INTERDICTION VARIANT)

The Tiburón Interdiction variant is a heavily armed version of the renowned patrol boat design.

Handling	Speed	Accel	Body	Armor	Sig
3	90	5	5	4	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	7	32	522	

Seating: 2 bucket + 1 bench
Entry Points: 0
Fuel: Diesel (500 liters)
Point Value: 8,181
Template: Armed sport cruiser
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 2,450,000¥
Reference: Aztlan
Other Features: ECM 5, ECCM 5, mini-turrets (weapon not included), 3 micro-turrets (weapons not included)

BAC-DASSAULT-MBB EFA VARIANTS

The EuroFighter Aircraft is a time-tested tactical fighter used by military and corporate forces.

Handling	Speed	Accel	Body	Armor	Sig
3	150/2,000	150	7	6	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	7	2	1,505	

Seating: 1 ejection
Entry Points: 1
Fuel: Jet (2,500 liters)
Point Value: 13,765
Template: Jet fighter
Setup/Breakdown: NA
Landing/Takeoff: STOL
Economy: 0.1 km/liter
Cost: 10,300,000¥
Reference: SRII
Other Features: ECM 4, ECCM 5, enviroseal (gas), external fixed hardpoint (weapon not included), 4 external missile mounts (1,200 kg total ordnance weight)

BLOHM & VOSS RIVER COMMANDER

The River Commander paramilitary patrol boat is designed for river and harbor security duties.

Handling	Speed	Accel	Body	Armor	Sig
4	75	4	5	9	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	55	805	

Seating: 2 bucket + 1 bench
Entry Points: 0
Fuel: Diesel (500 liters)
Point Value: 2,196
Template: Armed sport cruiser
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 440,000¥
Reference: RBB1
Other Features: Living accommodations (partial), 3 micro-turrets (weapons not included), mini-turret (weapon not included)

BMW BLITZEN 2050

The Blitzen is a high-performance combat bike.

Handling	Speed	Accel	Body	Armor	Sig
3/4	220	14	2	2	1
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	–	0	1	10	

Seating: 2 bucket (1 front, 1 rear)
Entry Points: 0
Fuel: Gasoline (35 liters)
Point Value: 586
Template: Racing bike
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 7.6 km/liter
Cost: 29,300¥
Reference: RBB1
Other Features: Turbocharging (factored in)

CAS WANDJINA RPV

The Wandjina combat drone converts easily between assault and anti-air configurations.

Handling	Speed	Accel	Body	Armor	Sig
4	60/500	25	3	6	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	4	3	1	25	

Seating: None
Entry Points: NA
Fuel: Jet (350 liters)
Point Value: 2,852
Template: Large fixed wing UAV
Setup/Breakdown: 8 minutes
Landing/Takeoff: STOL
Economy: .5 km/liter
Cost: 214,000¥
Reference: RBB1
Other Features: External fixed hardpoint (weapon not included), external missile mounts (300 kg total ordnance weight), remote control interface, rigger adaptation

CASA J-239 RAVEN

The Raven features a reinforced glider airframe and twin micro-turbine engines.

Handling	Speed	Accel	Body	Armor	Sig
3	135/400	30	6	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	4	16	450	

Seating: 2 bucket
Entry Points: 1
Fuel: Jet (500 liters)
Point Value: 1,453
Template: Armed twin-engine prop
Setup/Breakdown: NA
Landing/Takeoff: STOL
Economy: 1 km/liter
Cost: 726,000¥
Reference: RBB1
Other Features: 2 external fixed hardpoints (weapon not included), turbocharging (factored in)

CESSNA C750

This dual-prop craft can carry passengers or serve as a surveillance plane.

	Handling	Speed	Accel	Body	Armor	Sig
Standard	5	135/340	22	6	0	4
Pass.	5	135/340	22	6	0	4

	Autonav	Pilot	Sensor	Cargo	Load
Standard	2	—	1	46	1,100
Pass.	2	—	1	0/10	500

Seating: 2 bucket/4 bucket, 2 f, 2 r (x3)
Entry Points: 1 + 1t
Fuel: Jet (500 liters)
Point Value: 820
Template: Twin-engine prop
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: STOL
Economy: 1 km/liter
Cost: 205,000¥
Reference: SRII

CHRYSLER-NISSAN G12A

This general-purpose air-cushion vehicle can be easily converted from a passenger to a cargo craft.

	Handling	Speed	Accel	Body	Armor	Sig
Pass.	4	120	5	4	0	2
Cargo	4	120	5	4	0	2
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Pass.	2	—	0	6	250	
Cargo	2	—	0	66	1,000	

Seating: 4 bucket (2 front, 2 rear) (x5)/2 bucket
Entry Points: 2 + 1 + 2 + T/2 + 1d
Fuel: Diesel (400 liters)
Point Value: 200
Template: Medium hovercraft
Other Features: None

Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/liter
Cost: 50,000¥
Reference: SRII

CHRYSLER-NISSAN JACKRABBIT

The sleek Jackrabbit is one of the most common cars on the road today.

	Handling	Speed	Accel	Body	Armor	Sig
Elec.	3/8	60	4	3	0	5
Meth.	3/8	90	6	3	0	4
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Elec.	1	—	0	1	45	
Meth.	1	—	0	2	90	

Seating: 2 bucket + 1 bench (Elec.) 2 bucket (Meth.)
Entry Points: 2 + 1t
Fuel: Elec. 200 PF; Meth. 406 bars
Point Value: 163/180
Template: Commuter
Other Features: None

Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/PF, 1.25 km/bar
Cost: 16,300¥/18,000¥
Reference: SRII, RBB1

CHRYSLER NISSAN PATROL-1

The Patrol-1 is the most common urban patrol car in use today.

Handling	Speed	Accel	Body	Armor	Sig
4/8	180	10	3	2	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	0	11	35	

Seating: 2 bucket + 3 bench
Entry Points: 2 + 2 + 1 trunk
Fuel: Gasoline (60 liters)
Point Value: 579
Template: Armored sedan
Other Features: Electronics port (with radio), enviroseal (gas), 2 pintle mounts, Thermal Baffles 1 (factored in), Turbocharging 2 (factored in)

Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 7.2 km/liter
Cost: 174,000¥
Reference: SRII

CITROËN BROUILLARD SMOKE GENERATOR

The Brouillard drone produces a continuous, wide-area smoke screen.

Handling	Speed	Accel	Body	Armor	Sig
4/4	50	5	2	0	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	1	0	250	

Seating: NA
Entry Points: NA
Fuel: Diesel (100 liters)
Point Value: 1,250
Template: Large tracked crawler
Other Features: Remote control interface, rigger adaptation, smoke generator (250 liters fog oil, 60 liters graphite smoke fuel)

Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 1 km/ltr (Idle: 1 hour/ltr)
Cost: 12,500¥
Reference: R2

COLORADO CRAFT CIGARETTE HYDROFOIL

This convertible hydrofoil is a lightweight, high-speed water craft.

Handling	Speed	Accel	Body	Armor	Sig
4 (5)	75 (105)	10 (15)	3	0	3 (1)
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2 (0)	—	0	8	240	

Seating: 2 bucket
Entry Points: 0
Fuel: Gasoline (100 liters)
Point Value: 300
Template: Speedboat
Other Features: Hydrofoil capability (stats in parentheses apply when hydrofoil is engaged)

Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 3 km/liter
Cost: 30,000¥
Reference: RBB1

CONESTOGA TRAILBLAZER

Well-built and reliable, the Trailblazer tractor is the vehicle of choice for many independent truckers.

Handling	Speed	Accel	Body	Armor	Sig
4/8	90	2	5	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	6	25,000	

Seating: 2 bucket, 1 folding bench
Entry Points: 2
Fuel: Diesel (750 liters)
Point Value: 1,500
Template: Tractor
Other Features: None

Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 3 km/liter
Cost: 150,000¥
Reference: RBB1

CYBERSPACE DESIGNS DALMATIAN

The Dalmatian recon drone features a unique, limited hover capability.

Handling	Speed	Accel	Body	Armor	Sig
3	105	8	2	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	1	3	80	

Seating: None
Entry Points: NA
Fuel: Jet (300 liters)
Point Value: 631
Template: Sm. vectored-thrust UAV
Other Features: Remote control interface, rigger adaptation

Setup/Breakdown: 5 minutes
Landing/Takeoff: VTOL
Economy: .75 km/ltr (Idle: 5 min/ltr)
Cost: 15,800¥
Reference: RBB1

CYBERSPACE SYSTEMS WOLFHOUND ADVANCED RECONNAISSANCE AIRCRAFT

The Wolfhound reconnaissance UAV drone employs an improved pilot system programmed with detection-avoidance maneuvers.

Handling	Speed	Accel	Body	Armor	Sig
3	210	12	2	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	1	3	80	

Seating: None
Entry Points: NA
Fuel: Jet (300 liters)
Point Value: 1,241
Template: Sm. vectored-thrust UAV
Other Features: Remote control interface, rigger adaptation, Robotic Learning Pool 2 (for Avoid Detection)
Setup/Breakdown: 5 minutes
Landing/Takeoff: VTOL
Economy: .75 km/ltr (Idle: 5 min/ltr)
Cost: 31,000¥
Reference: R2

DOC WAGON CITYMASTER VARIANT

This version of the standard Citymaster usually features two light machine guns and can carry passengers in addition to the patient and crew.

Handling	Speed	Accel	Body	Armor	Sig
5/11	120	3	5	10	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	0	25	525	

Seating: 2 bucket + 2 folding bench (x2)
Entry Points: 2 + 1 rear
Fuel: Diesel (250 liters)
Point Value: 1,964
Template: Armored heavy transport Ambulance
Other Features: Anti-theft system (6), enviroseal (gas), life support (20 man-hours), medical treatment gear (2 patients), small turret (weapon not included)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5.2 km/liter
Cost: 589,000¥
Reference: NAGRL

DOC WAGON CRT AMBULANCE

These multi-patient vehicles respond only to crisis calls, rather than patrolling.

Handling	Speed	Accel	Body	Armor	Sig
4/10	75	6	5	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	8	500	

Seating: 2 bucket
Entry Points: 2 + 1 gate-style
Fuel: Diesel (250 liters)
Point Value: 494
Template: Medium transport ambulance
Other Features: Anti-theft system (6), medical treatment gear (4 patients)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 4 km/liter
Cost: 98,800¥
Reference: NAGRL

DOC WAGON CRT AIR UNIT

The crisis-response-team air unit can pluck injured personnel out of the tightest spots.

Handling	Speed	Accel	Body	Armor	Sig
5	320	10	6	0	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	15	350	

Seating: 2 bucket
Entry Points: 1 + 1r
Fuel: Jet (750 liters)
Point Value: 1,635
Template: Ambulance tilt-wing
Other Features: Anti-theft system (6), medical treatment gear (4 patients), VTOL capability
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.6 km/liter
Cost: 411,000¥
Reference: NAGRL

DOC WAGON OSPREY II

The Osprey II enables Doc Wagon teams to extract injured personnel from combat zones.

Handling	Speed	Accel	Body	Armor	Sig
5	380	12	6	3	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	12	300	

Seating: 2 bucket
Entry Points: 1 + 1r
Fuel: Jet (600 liters)
Point Value: 1,635
Template: Armed ambulance tilt-wing
Other Features: Anti-theft system (6), 2 external hardpoints (weapons not included), medical treatment gear (2 patients), VTOL capability
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.6 km/liter
Cost: 817,000¥
Reference: NAGRL

DOCWAGON SRT AMBULANCE

Designed to accommodate one patient, this vehicle patrols a regular beat in order to respond quickly to calls in its area.

Handling	Speed	Accel	Body	Armor	Sig
4/10	80	8	4	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	6	250	

Seating: 2 bucket
Entry Points: 2 + 1 gate-style
Fuel: Gasoline (95 liters)
Point Value: 244
Template: Ambulance van
Other Features: Anti-theft system (6), medical treatment gear (1 patient)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5 km/liter
Cost: 48,800¥
Reference: RBB1

DOC WAGON SRT HELICOPTER

The standard-response-team (SRT) helicopter is Doc Wagon's standard "air ambulance."

Handling	Speed	Accel	Body	Armor	Sig
5	250	18	4	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	5	350	

Seating: 2 bucket
Entry Points: 2 + 1d
Fuel: Jet (1,250 liters)
Point Value: 1,104
Template: Ambulance utility helicopter
Other Features: Anti-theft system (6), medical treatment gear (1 patient)
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.2 km/liter
Cost: 386,000¥
Reference: NAGRL

DOC WAGON WK-2 STALLION VARIANT

Doc Wagon's modified WK-2 Stallion is a heavily armed version of its standard "air ambulance."

Handling	Speed	Accel	Body	Armor	Sig
5	190	14	4	6	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	4	50	

Seating: 2 bucket
Entry Points: 2 + 1d
Fuel: Jet (1,250 liters)
Point Value: 1,299
Template: Ambulance utility helicopter
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.2 km/liter
Cost: 455,000¥
Reference: NAGRL
Other Features: Anti-theft system (6), 2 external hardpoints (weapons not included), medical treatment gear (1 patient)

DODGE SCOOT

This electric-powered scooter is perfect for whizzing down city streets.

Handling	Speed	Accel	Body	Armor	Sig
3/6	60	3	2	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	—	1	15	

Seating: 1 bucket
Entry Points: 0
Fuel: Electric (75 PF)
Point Value: 40
Template: Scooter
Other Features: Gridlink
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/PF
Cost: 2,000¥
Reference: SRII

EMBRAER-DASSAULT MISTRAL

This fast plane offers a full range of flight instruments and easy engine access for simplified field maintenance.

Handling	Speed	Accel	Body	Armor	Sig
4	135/300	21	6	0	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	0/12	600	

Seating: 2 bucket front, 3 rear (x5)
Entry Points: 1 + 1t
Fuel: Jet (2,000 liters)
Point Value: 1,125
Template: Twin-engine prop
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: VSTOL
Economy: 1 km/liter
Cost: 281,000
Reference: RBB1

ENTERTAINMENT SYSTEMS PAPOOSE

The Papoose is an electric-powered racing cycle.

Handling	Speed	Accel	Body	Armor	Sig
3/6	90	3	2	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	—	1	35	

Seating: 1 bucket
Entry Points: 0
Fuel: Electric (75 PF)
Point Value: 120
Template: Scooter
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/PF
Cost: 6,000¥
Reference: RBB1

EUROCAR WESTWIND 2000

This luxury car offers improved suspension and high performance—at a price.

	Handling	Speed	Accel	Body	Armor	Sig
Standard	3/8	210	10	3	0	2
Turbo	3/8	240	12	3	0	1
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Standard	3	—	1	5	45	
Turbo	3	—	1	5	45	

Seating: 2 bucket (front), 1 bench (rear)
Entry Points: 2 + 1t
Fuel: Gasoline (60/80 liters)
Point Value: 543/691
Template: Luxury sports car
Other Features: APPS (both), turbocharging (factored in—turbo variant)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/5.5 km per ltr
Cost: 109,000¥/138,000¥
Reference: SRII, RBB1

FEDERATED BOEING COMMUTER

This commuter plane is the standard city-airport shuttlecraft.

Handling	Speed	Accel	Body	Armor	Sig
5	320	10	6	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	10/32	850	

Seating: 2 bucket front, 3 rear (x5)
Entry Points: 1 + 1
Fuel: Jet (750 liters)
Point Value: 1,510
Template: Tilt-wing
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.6 km/liter
Cost: 378,000¥
Reference: SRII

FEDERATED BOEING EAGLE

The Eagle vectored-thrust vehicle was designed to fulfill multiple roles.

Handling	Speed	Accel	Body	Armor	Sig
3	1,800	75	7	10	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	8	2	500	

Seating: 1 ejection
Entry Points: 1
Fuel: Jet (2,500 liters)
Point Value: 65,344
Template: Jump jet fighter
Other Features: ECM 7, ECCM 8, external fixed hardpoints (weapons not included), 6 missile mounts (1,800 kg total ordnance weight)
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.1 km/liter
Cost: 49,000,000¥
Reference: SRII

FERRARI APPALOOSA LIGHT SCOUT

The Ferrari Appaloosa is a compact recon vehicle with high-end performance complemented by plenty of armor and armament.

Handling	Speed	Accel	Body	Armor	Sig
2/3	125	12	7	9	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	6	5	625	

Seating: 1 bucket + 2 bucket + 1 folding bench
Entry Points: 1 hatch + 1 + 1 double-sized
Fuel: Diesel (800 liters)
Point Value: 4,779
Template: APC
Other Features: ECM 5, ECCM 5, medium turret (weapon not included), micro-turret (weapon not included), Radar Absorbent Materials 1 (factored in), Thermal Baffles 1 (factored in)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 1,430,000¥
Reference: RBB1

FERRET RPD-VI PERIMETER DRONE

The Ferret is a reliable, low-maintenance perimeter-security drone.

Handling	Speed	Accel	Body	Armor	Sig
3/5	30	2	1	3	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	3	4	3	50	

Seating: None
Entry Points: NA
Fuel: Electric (40 PF)
Point Value: 2,155
Template: Medium wheeled crawler
Setup/Breakdown: 3 minutes
Landing/Takeoff: NA
Economy: 2 km/PF (Idle: 1 hour/PF)
Cost: 65,000¥
Reference: FF
Other Features: Remote control interface, rigger adaptation, spotlight (white light)

FIAT-FOKKER CLOUD NINE

The Cloud Nine is an amphibious vehicle with a reinforced boat hull and turboprop.

Handling	Speed	Accel	Body	Armor	Sig
4	60/200	21	4	0	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	8	325	

Seating: 2 folding bucket, 4 reinforced folding bench (r)
Entry Points: 2 + 2
Fuel: Jet (250 liters)
Point Value: 890
Template: Single-engine prop
Other Features: Flotation package
Setup/Breakdown: NA
Landing/Takeoff: VSTOL
Economy: 1 km/liter
Cost: 223,000¥
Reference: RBB1

FMC-STONEBROOKE TADS FIREBIRD

The TADS (target-acquisition and -designation system) Salamander is a UAV drone that uses BattleTac FDDM firmware to identify and mark targets for other vehicles to engage.

Handling	Speed	Accel	Body	Armor	Sig
. 4	40/105	20	2	0	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	3	0	10	

Seating: None
Entry Points: NA
Fuel: Jet (230 liters)
Point Value: 1,395
Template: Med. fixed-wing UAV
Setup/Breakdown: 5 minutes
Landing/Takeoff: STOL
Economy: 1 km/liter
Cost: 35,000¥
Reference: R2
Other Features: BattleTac FDDM, remote control interface, rigger adaptation

FMC-STONEBROOKE TADS SALAMANDER

The TADS (target acquisition and designation system) Salamander is a tracked drone that uses BattleTac FDDM firmware to identify and mark targets for other vehicles to engage.

Handling	Speed	Accel	Body	Armor	Sig
4/4	60	6	1	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	3	0	10	

Seating: NA
Entry Points: NA
Fuel: Gasoline (60 liters)
Point Value: 1,150
Template: Med. tracked crawler
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 1.5 km/ltr (Idle: 1 hour/ltr)
Cost: 11,500¥
Reference: R2
Other Features: BattleTac FDDM, remote contrrol interface, rigger adaptation

FORD AMERICAR

The Americar remains Ford's best-seling sub-midsize car.

Handling	Speed	Accel	Body	Armor	Sig
4/8	105	8	3	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	10	110	

Seating: 4 bucket (2 front, 2 rear)
Entry Points: 2 + 1t
Fuel: Gasoline (60 liters)
Point Value: 200
Template: Sedan
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 12.4 km/liter
Cost: 20,000¥
Reference: SRII

FORD-CANADA BISON

Excellent off-road suspension and balloon tires make the Bison a go-anywhere vehicle.

Handling	Speed	Accel	Body	Armor	Sig
4/3	135	6	4	4	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	67	2,000	

Seating: 2 bucket, 2 folding bench
Entry Points: 2 + 1d + 1g
Fuel: Diesel (250 liters)
Point Value: 1,500
Template: RV
Other Features: Concealed armor, living amenities (basic)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/liter
Cost: 150,000¥
Reference: RBB1

GAZ-NIKI GNRD-71 BIS SNOOPER

The Snooper security drone can traverse even the most difficult terrain.

Handling	Speed	Accel	Body	Armor	Sig
4/3	75	3	1	0	8
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	1	.5	6	

Seating: None
Entry Points: NA
Fuel: Electric (180 PF)
Point Value: 171
Template: Med. wheeled crawler
Other Features: Remote control interface, rigger adaptation
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 1 km/PF (Idle: 2 min/PF)
Cost: 1,750¥
Reference: RBB1

GAZ-NIKI WHITE EAGLE

Easy to maintain and durable, the White Eagle can also mount several light weapons.

Handling	Speed	Accel	Body	Armor	Sig
3/3	140	4	2	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	—	2	30	

Seating: 2 bucket (1 front, 1 rear)
Entry Points: o
Fuel: Gasoline (35 liters)
Point Value: 300
Template: Off-road
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 10 km/liter
Cost: 15,000¥
Reference: RBB1

GAZ-WILLYS NOMAD

This mid-sized four-wheel drive vehicle combines comfort with all-terrain capability.

Handling	Speed	Accel	Body	Armor	Sig
3/3	100	9	4	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	18	750	

Seating: 2 bucket, 2 folding bench
Entry Points: 2 + 0
Fuel: Diesel (90 liters)
Point Value: 410
Template: Pickup
Other Features: Roll bars
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 7.8 km/liter
Cost: 41,000¥
Reference: RBB1

GENERAL PRODUCTS COP

The City Operations Patroller is a common alternative to a full-size patrol car.

Handling	Speed	Accel	Body	Armor	Sig
4/8	90	5	3	1	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	2	15	

Seating: 1 bucket + 1 bucket
Entry Points: 1 + 1 trunk
Fuel: Electric (200 PF)
Point Value: 220
Template: Armored Sedan
Other Features: Gridlink, Turbocharging 1 (factored in)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 1 km/PF
Cost: 66,000¥
Reference: RBB1

GENERIC SURVEILLANCE DRONE

The typical surveillance drone carries thermographic and low-light video scanners.

Handling	Speed	Accel	Body	Armor	Sig
3	70	9	1	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	1	0	10	

Seating: None
Entry Points: NA
Fuel: Jet (210 liters)
Point Value: 250
Template: Med. rotary-wing UAV
Other Features: Remote control interface, rigger adaptation
Setup/Breakdown: 3 minutes
Landing/Takeoff: VTOL
Economy: .25 km/ltr (Idle: 5min/ltr)
Cost: 6,250¥
Reference: SRII

GM-NISSAN DOBERMAN

The Doberman is a perimeter-patrol drone equally effective during daytime or night-time conditions.

Handling	Speed	Accel	Body	Armor	Sig
3/5	70	8	2	6	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	1	1	51	

Seating: None
Entry Points: NA
Fuel: Gasoline (25 liters)
Point Value: 854
Template: Lg. wheeled crawler
Other Features: External fixed firmpoint (weapon not included), micro-turret (weapon not included), remote control interface, rigger adaptation
Setup/Breakdown: 5 minutes
Landing/Takeoff: NA
Economy: 4 km/liter (Idle: 1 hour/liter)
Cost: 25,600¥
Reference: RBB1

GM-NISSAN SPOTTER

This winged stealth craft carries equipment similar to the gear carried by surveillance drones.

Handling	Speed	Accel	Body	Armor	Sig
3	40/200	15	2	0	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	1	0	10	

Seating: None
Entry Points: NA
Fuel: Jet (120 liters)
Point Value: 615
Template: Med. fixed-wing UAV
Other Features: Remote control interface, rigger adaptation
Setup/Breakdown: 5 minutes
Landing/Takeoff: VSTOL
Economy: .5 km/liter
Cost: 15,400¥
Reference: SRII

GMC 4201

This heavy-built, Jeep-like truck is known for solid workmanship and reliability.

Handling	Speed	Accel	Body	Armor	Sig
3/7	85	3	6	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	122	6,500	

Seating: 2 bucket, 1 folding bench
Entry Points: 2
Fuel: Diesel (500 liters)
Point Value: 748
Template: Heavy transport
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 3 km/liter
Cost: 74,800¥
Reference: RBB1

GMC BANSHEE

This light t-bird was designed for reconnaissance and courier duty.

Handling	Speed	Accel	Body	Armor	Sig
3	250/1,000	50	6	18	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	7	30	805	

Seating: 1 ejection + 2 ejection
Entry Points: 3h + 1h
Fuel: Jet (7,500 liters)
Point Value: 11,255
Template: Thunderbird
Other Features: ECM 5, ECCM 5, fixed external hardpoint (weapon not included), Radar-Absorbent Materials 2 (factored in), small turret (weapons not included)
Setup/Breakdown: NA
Landing/Takeoff: VSTOL
Economy: 0.05 km/liter
Cost: 8,440,000¥
Reference: SRII

GMC BEACHCRAFT PATROLLER

The Beachcraft is a swift, lightly armed patrol craft.

Handling	Speed	Accel	Body	Armor	Sig
4	165	9	4	6	1
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	65	510	

Seating: 2 bucket
Entry Points: 2 + 1d
Fuel: Diesel (400 liters)
Point Value: 698
Template: Armed hovercraft
Other Features: External fixed hardpoint (weapon not included), Turbocharging 1 (factored in)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.45 km/liter
Cost: 349,000¥
Reference: SRII

GMC BEACHCRAFT VACATIONER

The Vacationer is a recreational hovercraft designed for stability on the open water.

Handling	Speed	Accel	Body	Armor	Sig
4	105	7	4	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	0	6	300	

Seating: 2 folding bucket, 4 reinforced folding bucket
Entry Points: 2 + 2 + 1d
Fuel: Gasoline (400 liters)
Point Value: 800
Template: Medium hovercraft
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/liter
Cost: 200,000¥
Reference: RBB1
Other Features: Hovercraft water seals, living amenities (Basic)

GMC BULLDOG STEP-VAN

The Bulldog is an extremely reliable version of the standard delivery truck.

	Handling	Speed	Accel	Body	Armor	Sig
Standard	4/8	85	4	4	2	2
BC Var.	4/6	85	4	4	5	2

	Autonav	Pilot	Sensor	Cargo	Load
Standard	2	—	0	50	1,165
BC Var.	2	—	0	50	1,125

Seating: 1 bucket, 1 folding bench
Entry Points: 2 + 1g
Fuel: Diesel (100 liters)
Point Value: 350/600
Template: Van
Other Features: Concealed armor
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 4 km/liter
Cost: 35,000¥/60,000¥
Reference: RBB1

GMC "HARPY SCOUT" LAV

The Harpy Scout is an advanced LAV designed for security work.

Handling	Speed	Accel	Body	Armor	Sig
3	250/850	45	6	15	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	5	25	600	

Seating: 1 ejection + 2 ejection
Entry Points: 2h
Fuel: Jet (7,500 liters)
Point Value: 12,790
Template: Thunderbird
Other Features: ECM 3, ECCM 3, 2 external missile mounts (each holds 2 Landshark missiles), Radar Absorbent Materials 2 (factored in), small turret (with Vanquisher minigun)
Setup/Breakdown: NA
Landing/Takeoff: VSTOL
Economy: 0.05 km/liter
Cost: 9,600,000¥
Reference: LS

GMC MPUV

The versatile GMC Multi-Purpose Utility Vehicle is the world's most popular light combat vehicle.

Handling	Speed	Accel	Body	Armor	Sig
4/3	120	8	4	6	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	—	11	745	

Seating: 2 bucket + 1 bench
Entry Points: 2 + 2
Fuel: Diesel (100 liters)
Point Value: 587
Template: Armored pickup
Other Features: Electronics port (with radio), pintle mount (weapon not included), spotlight (white light)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/liter
Cost: 58,700¥
Reference: FF

GMC RIVERINE

This popular commercial patrol boat features a water-jet propulsion system and an environmentally sealed cabin.

Handling	Speed	Accel	Body	Armor	Sig
3	90	5	5	6	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	10	250	

Seating: 2 bucket + 2 folding bench (x5)
Entry Points: o
Fuel: Diesel (200 liters)
Point Value: 1,012
Template: Armed sport cruiser
Other Features: Ring mount
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 202,000¥
Reference: SRII

GMC RIVERINE (POLICE MODEL)

This variant of the Riverine patrol boat features expanded cargo capacity.

Handling	Speed	Accel	Body	Armor	Sig
3	90	5	5	6	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	45	1,290	

Seating: 2 bucket + 2 folding bench
Entry Points: o
Fuel: Diesel (200 liters)
Point Value: 1,199
Template: Armed sport cruiser
Other Features: External fixed hardpoint (weapon not included), living amenities (Basic), 2 ring mounts
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 240,000¥
Reference: RBB1

GMC RIVERINE (SECURITY MODEL)

This variant of the Riverine patrol boat features micro- and mini-turrets.

Handling	Speed	Accel	Body	Armor	Sig
3	90	5	5	6	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	36	1,230	

Seating: 2 bucket + 2 folding bench
Entry Points: o
Fuel: Diesel (200 liters)
Point Value: 1,497
Template: Armed sport variant
Other Features: Living amenities (Basic), 2 micro-turrets (weapons not included), mini-turret (weapon not included)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 300,000¥
Reference: RBB1

GMC-NISSAN HOVERTRUCK

This hovertruck has a specially fitted water-planing boathull for long trips up hard-to-navigate rivers.

Handling	Speed	Accel	Body	Armor	Sig
5	120	5	5	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	4/76	1,825	

Seating: 2 folding bucket, 1 reinforced folding bench
Entry Points: 2 + 1
Fuel: Diesel (500 liters)
Point Value: 600
Template: Large hovercraft
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/liter
Cost: 150,000¥
Reference: RBB1

GOODYEAR COMMUTER-47

This small lighter-than-air craft was designed for personal use.

Handling	Speed	Accel	Body	Armor	Sig
3	250	15	8	1	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	50	1,275	

Seating: 2 bucket, 1 bench, 6 bucket
Entry Points: 1 + 2
Fuel: Jet (2,000 liters)
Point Value: 2,941
Template: Zepplin
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 1 km/liter
Cost: 735,000¥
Reference: RBB1

GTE-FORD RETRANS UNIT

The mobile retransmission unit (more commonly known as a "retrans unit") extends a remote control network's effective area by intercepting and retransmitting signals from a remote control deck.

Handling	Speed	Accel	Body	Armor	Sig
4	40/105	15	2	0	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	1	5	120	

Seating: None
Entry Points: NA
Fuel: Jet (120 liters)
Point Value: 1,217
Template: Med. fixed-wing UAV
Other Features: Remote control interface, rigger adaptation, Retransmission Unit (Flux 3)
Setup/Breakdown: 5 minutes
Landing/Takeoff: Standard
Economy: 1 km/liter
Cost: 30,000¥
Reference: R2

HARLAND & WOLFF CLASSIQUE

A large luxury yacht, the Classique can accomodate twelve passengers and a six-man crew.

Handling	Speed	Accel	Body	Armor	Sig
5	45	4	7	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	1	20	1,150	

Seating: 12 bucket (2 front, 10 rear)
Entry Points: 2
Fuel: Diesel (500 liters)
Point Value: 1,300
Template: Luxury yacht
Other Features: Living amenities (High)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 325,000¥
Reference: RBB1

HARLEY ELECTROGLIDE-1000

This fast police cycle features runflat tires and off-road suspension.

Handling	Speed	Accel	Body	Armor	Sig
3/4	228	14	2	2	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	0.5	50	

Seating: 1 bucket
Entry Points: 0
Fuel: Gasoline (45 liters)
Point Value: 466
Template: Armored racing bike
Other Features: Electronics port w/radio, 2 external fixed firmpoints (weapons not included)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 8 km/liter
Cost: 116,000¥
Reference: RBB1

HARLEY-DAVIDSON SCORPION

This bike is a classic, heavy-bodied road hog.

Handling	Speed	Accel	Body	Armor	Sig
4/5	120	6	2	1	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	4	60	

Seating: 2 bucket (1 front, 1 rear)
Entry Points: 0
Fuel: Gasoline (20 liters)
Point Value: 285
Template: Chopper
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 10 km/liter
Cost: 14,300¥
Reference: SRII

HAWKER-RIDLEY HS-895 SKYTRUCK

This all-purpose aircraft has a basic airframe that can be reconfigured to suit almost any buyer's needs.

Handling	Speed	Accel	Body	Armor	Sig
5	135/320	22	9	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	260	1,500	

Seating: 2 folding bucket, 2 reinforced bench (x20)
Entry Points: 2 +1d
Fuel: Jet (5,000 liters)
Point Value: 2,775
Template: Prop airliner
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: Standard
Economy: 0.75 km/liter
Cost: 694,000¥
Reference: RBB1

HONDA-GM 3220 ZX

The Honda ZX is a sports car for the budget-minded.

	Handling	Speed	Accel	Body	Armor	Sig
Standard	4/8	105	10	3	0	2
Turbo	4/8	160	12	3	0	1
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Standard	1	—	0	3	40	
Turbo	2	—	0	3	40	

Seating: 4 bucket (2 front, 2 rear)
Entry Points: 2 + 1t
Fuel: Gasoline (60 liters)
Point Value: 260/358
Template: Sports car
Other Features: None/Turbocharging (factored in)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/5.4 km per liter
Cost: 26,000¥/35,800¥
Reference: RBB1

HONDA VIKING

This extra-heavy bike can accomodate reinforced seating for troll-sized riders.

Handling	Speed	Accel	Body	Armor	Sig
3/5	120	5	2	1	1
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	4	40	

Seating: 1 bucket + 1 bucket (both reinforced)
Entry Points: 0
Fuel: Gasoline (35 liters)
Point Value: 356
Template: Chopper
Other Features: Turbocharging (factored in)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 9.5 km/liter
Cost: 17,800¥
Reference: RBB1

HUGHES AEROSPACE AIRSTAR 2050

This midsized helicopter boasts the kind of accommodations usually found aboard expensive luxury aircraft.

Handling	Speed	Accel	Body	Armor	Sig
4	200	16	7	6	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	1	10	450	

Seating: 2 bucket + 3 bucket (x3)
Entry Points: 2 + 2 + 1d
Fuel: Jet (4,500 liters)
Point Value: 2,519
Template: Luxury cargo
Other Features: Concealed armor, luxury accommodations
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.2 km/liter
Cost: 944,000¥
Reference: SRII

HUGHES WK-2 STALLION

This workhorse helicopter can be fitted to carry cargo, though it slows the vehicle down.

Handling	Speed	Accel	Body	Armor	Sig
5	190	14	4	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	72	1,250	

Seating: 2 bucket
Entry Points: 2 + 1d
Fuel: Jet (1,250 liters)
Point Value: 1,025
Template: Utility
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.2 km/liter
Cost: 256,000¥
Reference: SRII

HYUNDAI OFFROADER

This all-terrain cycle is one of the best in the off-road market.

Handling	Speed	Accel	Body	Armor	Sig
4/2	140	4	2	0	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	1	20	

Seating: 2 bucket (1 front, 1 rear)
Entry Points: 0
Fuel: Methane (300 bars)
Point Value: 271
Template: Off-road
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 1.25 km/bar
Cost: 13,500¥
Reference: RBB1

INTEGRATED WEAPON SYSTEM DLK MK 6 UTILITY MACHINE

This versatile multi-purpose drone is used for maintenance and repair work, floor delivery and other industrial applications.

Handling	Speed	Accel	Body	Armor	Sig
4/4	35	3	2	0	8
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	3	1	1,000	

Seating: NA
Entry Points: NA
Fuel: Electric (100 PF)
Point Value: 450
Template: Large tracked crawler
Other Features: 2 mechanical arms, remote control interface, rigger adaptation
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 0.75 km/PF (Idle: 2 min/PF)
Cost: 10,000¥
Reference: R2

INTEGRATED WEAPON SYSTEM DLK MK 6 UTILITY MACHINE (ARMED VARIANT)

The armed variant of this drone is used throughout the United Kingdom.

Handling	Speed	Accel	Body	Armor	Sig
4/4	35	3	2	6	8
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	3	1	880	

Seating: NA
Entry Points: NA
Fuel: Electric (100 PF)
Point Value: 850
Template: Large tracked crawler
Other Features: External fixed firmpoint (weapon not included), 1 mechanical arm, remote control interface, rigger adaptation
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 0.75 km/PF (Idle: 2 min/PF)
Cost: 51,000¥
Reference: R2

LANDROVER MODEL 2046

This tough four-wheel drive vehicle is renowned for its durability.

	Handling	Speed	Accel	Body	Armor	Sig
SW	3/3	100	6	4	0	2
LW	3/5	100	6	4	0	2

	Autonav	Pilot	Sensor	Cargo	Load
SW	1	—	0	18	500
LW	2	—	0	11	750

Seating: 2 bucket, 4 folding bench (SW)
2 bucket, 6 folding bench (LW)
Entry Points: 2 + 1h + 1g
Fuel: Diesel (90/120 liters)
Point Value: 375/530
Template: 4WD pickup/4WD van
Other Features: None. Available in short wheel base (SW) and long wheel base (LW).
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5 km/liter
Cost: 37,500¥/53,000¥
Reference: RBB1

LAV-93 DEVIL RAT

The Devil Rat armored personnel carrier is part of military and corporate arsenals the world over.

Handling	Speed	Accel	Body	Armor	Sig
5/4	75	5	7	12	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	12	2,830	

Seating: 2 bucket + 2 bench + 2 bench
Entry Points: 1h + 2h + 1r
Fuel: Diesel (800 liters)
Point Value: 586
Template: APC
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 698,000¥
Reference: FF
Other Features: Amphibious Operation 1, electronics port (with telecommunications system), enviroseal (gas), small remote turret (weapon not included), Thermal Baffles 1 (factored in)

LAV-103 STRIKER LIGHT TANK

This heavy fire-support vehicle boasts impressive speed, as well as heavy armor and ample firepower.

Handling	Speed	Accel	Body	Armor	Sig
5/4	75	5	7	15	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	12	2,345	

Seating: 1 bucket + 2 bucket
Entry Points: 1 hatch + 2 hatch + 1 ramp
Fuel: Diesel (800 liters)
Point Value: 2,416
Template: APC
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 725,000¥
Reference: FF
Other Features: Amphibious Operation 1, electronics port (with telecommunications system), enviroseal (gas), medium remote turret (weapon not included), Thermal Baffles 1 (factored in)

LEAR-CESSNA PLATINUM I

The Platinum I is a super-luxurious transport with satellite navigational capability.

Handling	Speed	Accel	Body	Armor	Sig
4	135/330	24	6	0	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	2	4/10	400	

Seating: 2 folding bucket, 2 reinforced folding bench (x3)
Entry Points: 2 + 1t
Fuel: Jet (500 liters)
Point Value: 760
Template: Luxury twin-engine prop
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: STOL
Economy: 1 km/liter
Cost: 475,000¥
Reference: SRII

LEAR-CESSNA PLATINUM II

The Platinum II resembles its forerunner, but has greater speed.

Handling	Speed	Accel	Body	Armor	Sig
4	135/800	40	6	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	2	5/20	1,000	

Seating: 2 folding bucket, 2 reinforced folding bench (x2)
Entry Points: 2 + 1t
Fuel: Jet (1,500 liters)
Point Value: 1,375
Template: Luxury twin-engine turbine
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: STOL
Economy: 0.5 km/liter
Cost: 860,000¥
Reference: RBB1

LEYLAND-ROVER TRANSPORT/ELECTRIC

This sturdy, medium-sized van has plenty of interior space for transporting people or cargo.

	Handling	Speed	Accel	Body	Armor	Sig
Open Tray	4/8	75	4	4	0	5
Encl. Box	4/8	75	4	4	0	2
Minibus	4/8	75	4	4	0	2

	Autonav	Pilot	Sensor	Cargo	Load
Open Tray	2	—	0	4/45	225
Encl. Box	2	—	0	49	250
Minibus	2	—	0	8	300

Seating: 2 folding bucket, 1/2/8 reinforced folding bench
Entry Points: 2 + o/2 + 1d + 1g
Fuel: Electric (200 PF)
Point Value: 310/355/410
Template: Electric van
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/PF
Cost: 31,000¥/35,000¥/41,000¥
Reference: RBB1

LEYLAND-ROVER TRANSPORT/GASOLINE

	Handling	Speed	Accel	Body	Armor	Sig
Open Tray	4/8	105	8	4	0	2
Encl. Box	4/8	75	4	4	0	2
Minibus	4/8	75	4	4	0	2

	Autonav	Pilot	Sensor	Cargo	Load
Open Tray	2	—	0	4/45	300
Encl. Box	2	—	0	49	300
Minibus	2	—	0	8	300

Seating: 2 folding bucket, 1/2/8 reinforced folding bench (r)
Entry Points: 2 + o/2 + 1d + 1g
Fuel: Gasoline (120 liters)
Point Value: 408/450/500
Template: Gasoline van
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/liter
Cost: 41,000¥/45,000¥/50,000¥
Reference: RBB1

LEYLAND-ZIL TSARINA

This large car has an unusual seating arrangement—the passenger sits up front, with the driver slightly above and to the rear.

	Handling	Speed	Accel	Body	Armor	Sig
Elec.	4/8	75	4	3	0	5
Meth.	4/8	90	6	3	0	4

	Autonav	Pilot	Sensor	Cargo	Load
Elec.	1	—	0	2	40
Meth.	1	—	0	2	80

Seating: 2 bucket (1 front, 1 rear)
Entry Points: 1
Fuel: Elec. 150 PF; Meth. 450 bars
Point Value: 120/134
Template: Commuter
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/PF, 1.25 km/bar
Cost: 12,000¥/13,400¥
Reference: RBB1

LOCKHEED C-260 TRANSPORT

This versatile all-purpose aircraft is a common sight in corporate, military and mercenary forces.

Handling	Speed	Accel	Body	Armor	Sig
7	350	22	9	12	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	3,000	15,000	

Seating: 2 bucket + 3 bucket
Entry Points: 1 + 1r
Fuel: Jet (18,000 liters)
Point Value: 19,225
Template: Armored turbine airliner
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: Standard
Economy: 0.75 km/liter
Cost: 14,400,000¥
Reference: FF

LONE STAR "BLACK MARIAH" USPTV

The Black Mariah is the modern version of the celebrated "paddy wagon."

Handling	Speed	Accel	Body	Armor	Sig
4/5	100	4	4	9	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	50	1,255	

Seating: 2 bucket + 2 bench
Entry Points: 2 + 1g
Fuel: Diesel (95 liters)
Point Value: 1,329
Template: Armored prisoner van
Other Features: Enviroseal (gas), life support (12 man-hours), 2 mini-turrets (weapons not included), Thermal Baffles 1 (factored in)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 4 km/liter
Cost: 399,000¥
Reference: LS

LONE STAR MODIFIED FORD AMERICAR

Lone Star's modified Ford Americar makes an excellent patrol vehicle.

Handling	Speed	Accel	Body	Armor	Sig
4/8	105	8	3	3	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	10	65	

Seating: 2 bucket + 2 bucket
Entry Points: 2 + 1t
Fuel: Gasoline (60 liters)
Point Value: 359
Template: Armored sedan
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 12.4 km/liter
Cost: 108,000¥
Reference: LS

LONE STAR MODIFIED HONDA 3220ZX TURBO

Lone Star's modified Honda Turbo is one of the fastest wheeled patrol vehicles in use today.

Handling	Speed	Accel	Body	Armor	Sig
4/8	190	12	3	1	1
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	3	15	

Seating: 2 bucket + 2 bucket
Entry Points: 2 + 1t
Fuel: Gasoline (60 liters)
Point Value: 410
Template: Armored sports car
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5.4 km/liter
Cost: 123,000¥
Reference: LS

LONE STAR STRATO-9 SURVEILLANCE DRONE

The Strato-9 is a high-speed, high-altitude rotor drone with an exceptionally acute sensor suite.

Handling	Speed	Accel	Body	Armor	Sig
3	100	9	2	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	5	1	25	

Seating: None
Entry Points: NA
Fuel: Jet (60 liters)
Point Value: 2,480
Template: Lg. rotary-wing UAV
Other Features: ECM 2, external fixed hardpoint with MMG (with Gas-Vent 3 Recoil Comp. and 500 rounds ammo), remote control interface, rigger adaptation
Setup/Breakdown: 5 minutes
Landing/Takeoff: VTOL
Economy: .25 km/ltr (Idle: 5 min/ltr)
Cost: 186,000¥
Reference: LS

LONE STAR SWAT HOVERTRUCK

The Lone Star SWAT hovertruck is an armored ACV patrol vehicle.

Handling	Speed	Accel	Body	Armor	Sig
4	120	8	4	6	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	0	20	870	

Seating: 2 bucket + 2 bench (x5)
Entry Points: 2 + 2 + 1g
Fuel: Diesel (500 liters)
Point Value: 1,085
Template: Armored medium hovercraft
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/liter
Cost: 542,500¥
Reference: LS

LUFTSCHIFFBAU ZEPPELIN LZ-2049

The Zeppelin is a triangular airfoil with the control section and passenger/cargo deck built into the wing.

Handling	Speed	Accel	Body	Armor	Sig
3	200	10	8	4	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	122	2,500	

Seating: 2 bucket, 2 bench
Entry Points: 1 + 2 + 1d
Fuel: Jet (2,500 liters)
Point Value: 3,148
Template: Zepplin
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 1 km/liter
Cost: 787,000¥
Reference: RBB1

LUFTSCHIFFBAU ZEPPELIN LZ-2051-C

This variation on the Zeppelin 2049 has improved aerodynamics that give it optimum fuel economy despite its larger size.

Handling	Speed	Accel	Body	Armor	Sig
3	140	8	8	1	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	110	3,430	

Seating: 2 bucket, 2 bench
Entry Points: 1 + 1d
Fuel: Jet (4,000 liters)
Point Value: 3,140
Template: Zepplin
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 1 km/liter
Cost: 785,000¥
Reference: Aztlan

MARINE TECHNOLOGIES DOLPHIN II

The Dolphin is a popular pleasure craft among the well-heeled, available from most marine rental agencies.

Handling	Speed	Accel	Body	Armor	Sig
3	45	4	7	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	56	950	

Seating: 6 bucket (1 front, 5 rear)
Entry Points: 1
Fuel: Diesel (200 liters)
Point Value: 500
Template: Yacht
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 4 km/liter
Cost: 50,000¥
Reference: RBB1
Other Features: Living amenities (improved)

MCT-NISSAN ROTO-DRONE

The Roto-Drone is a simple, no-nonsense rotor-wing drone design.

Handling	Speed	Accel	Body	Armor	Sig
4	70	6	2	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	1	4	150	

Seating: None
Entry Points: NA
Fuel: Jet (150 liters)
Point Value: 264
Template: Med. rotary-wing UAV
Setup/Breakdown: 8 minutes
Landing/Takeoff: VTOL
Economy: .25 km/ltr (idle: 5 min/ltr)
Cost: 6,600¥
Reference: R2
Other Features: Remote control interface, rigger adaptation

MESAMETRIC KODIAK ROADWAY CLEARANCE SYSTEM

The Kodiak is a rugged, heavy-duty construction drone.

Handling	Speed	Accel	Body	Armor	Sig
4/4	30	2	4	12	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	3	0	1,000	

Seating: None
Entry Points: NA
Fuel: Diesel (120 liters)
Point Value: 4,000
Template: Special
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 2 km/liter (idle: 30 minutes/liter)
Cost: 40,000¥
Reference: R2
Other Features: Dozer blade, excavating shovel, remote control interface, rigger adaptation

MITSUBISHI NIGHTSKY

The Nightsky is the favorite limo of the well-to-do.

Handling	Speed	Accel	Body	Armor	Sig
4/8	120	8	4	2	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	1	10	60	

Seating: 8 bucket (4 rows of 2)
Entry Points: 2 + 2d + 1t
Fuel: Gasoline (200 liters)
Point Value: 1,666
Template: Limousine
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 8 km/liter
Cost: 250,000¥
Reference: SRII
Other Features: APPS, concealed armor, roll bars, enviroseal (gas), satellite uplink (connected by electronics port), wet bar, climate control

MITSUBISHI RUNABOUT

This sleek three-wheeler is designed for commuters and short-distance trips.

Handling	Speed	Accel	Body	Armor	Sig
4/8	75	5	3	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	1	40	

Seating: 1 bucket
Entry Points: 1
Fuel: Electric (150 PF)
Point Value: 100
Template: Subcompact
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/PF
Cost: 10,000¥
Reference: SRII
Other Features: None

MOONLIGHT AEROSPACE AVENGER

The Avenger is an ultralight, multipurpose, paramilitary aircraft featuring enhanced STOL capabilities.

Handling	Speed	Accel	Body	Armor	Sig
4	200	21	2	7	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	3	40	

Seating: 1 bucket
Entry Points: 1
Fuel: Jet (150 liters)
Point Value: 1,008
Template: Armed ultralight prop
Setup/Breakdown: NA
Landing/Takeoff: STOL
Economy: 1 km/liter
Cost: 302,000¥
Reference: RBB1
Other Features: 2 external fixed firmpoints (weapons not included)

MOSTRANS KVP-14T

Nicknamed "Ivan the Terrible," the Mostrans is a lightweight utility air-cushion vehicle.

	Handling	Speed	Accel	Body	Armor	Sig
Standard	4	180	9	4	0	2
Pass.	4	120	5	4	0	2

	Autonav	Pilot	Sensor	Cargo	Load
Standard	1	—	0	64	800
Pass.	1	—	0	18	300

Seating: 2 bucket/2 folding bucket, 3 rear (x3)
Entry Points: 2 + 1/2 + 1 + 1T
Fuel: Diesel (400 liters)
Point Value: 460/540
Template: Medium hovercraft
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5 km/liter
Cost: 115,000¥/135,000¥
Reference: RBB1
Other Features: None

NISSAN-HOLDEN BRUMBY

Smaller than the standard four-wheel drive, the Brumby works well in wooded terrain.

Handling	Speed	Accel	Body	Armor	Sig
4/3	100	7	4	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	12	500	

Seating: 2 folding bucket, 2 reinforced folding bench (r)
Entry Points: 2 + 1g
Fuel: Diesel (80 liters)
Point Value: 250
Template: 4WD pickup
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/liter
Cost: 25,000¥
Reference: RBB1
Other Features: None

NORDKAPP-CONESTOGA BERGEN

This heavy-duty "road train" is specially designed for travel through isolated areas.

	Handling	Speed	Accel	Body	Armor	Sig
Tractor	3/6	90	2	8	6	1
Trailer	3/6	90	2	7	3	1
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Tractor	4	—	1	5	400,000	
Trailer	2	—	0	1,008	80,000	

Seating: 4 bucket, 2 folding, 2 reinforced (tractor), 2 bucket (trailer)
Entry Points: 2 + 1h
Fuel: Diesel (2,000/1,000 liters)
Point Value: 6,000/2,000
Template: Special (train)
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 2 km/liter
Cost: 600,000¥/200,000¥
Reference: RBB1

NORTHRUP WASP (PRC-42B VARIANT)

This rotorcraft was designed for police and military service.

Handling	Speed	Accel	Body	Armor	Sig
3	130	15	2	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	2	2	68	

Seating: 1 bucket
Entry Points: 1
Fuel: Jet (250 liters)
Point Value: 610
Template: Armed autogyro
Other Features: ECCM 1, micro-turret (weapon not included)
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.25 km/liter
Cost: 122,000¥
Reference: SRII

NORTHRUP WASP (PRC-42F VARIANT)

The "F" series Wasp variant offers enhanced small-arms protection, improved handling and an upgraded engine.

Handling	Speed	Accel	Body	Armor	Sig
3	130	15	2	2	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	2	2	28	

Seating: 1 bucket
Entry Points: 1
Fuel: Jet (250 liters)
Point Value: 1,110
Template: Armed autogyro
Other Features: ECCM 1, micro-turret (weapon not included), Radar Absorbent Materials 2 (factored in)
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.25 km/liter
Cost: 222,000¥
Reference: FF

NORTHRUP YELLOWJACKET (PRC-44B VARIANT)

The Yellowjacket is a combat version of the famed Northrup Wasp helicopter.

Handling	Speed	Accel	Body	Armor	Sig
4	130	15	2	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	2	1	53	

Seating: 1 bucket
Entry Points: 1
Fuel: Jet (250 liters)
Point Value: 735
Template: Armed autogyro
Other Features: ECCM 1, mini-turret (weapon not included)
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.25 km/liter
Cost: 147,000¥
Reference: SRII

NORTHRUP YELLOWJACKET (PRC-44F VARIANT)

The "F" series Yellowjacket variant offers enhanced small-arms protection, improved handling and an upgraded engine.

Handling	Speed	Accel	Body	Armor	Sig
4	130	15	2	2	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	2	1	23	

Seating: 1 bucket
Entry Points: 1
Fuel: Jet (250 liters)
Point Value: 1,136
Template: Armed autogyro
Other Features: ECCM 1, mini-turret (weapon not included), Radar Absorbent Materials 2 (factored in)
Setup/Breakdown: NA
Landing/Takeoff: VTOL
Economy: 0.25 km/liter
Cost: 227,000¥
Reference: FF

PRATT & WHITNEY SUNDOWNER AERIAL SPRAYER

This unmanned aircraft features a sprayer system used to disperse liquid chemicals from the air.

Handling	Speed	Accel	Body	Armor	Sig
4	40/105	15	2	0	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	1	0	120	

Seating: None
Entry Points: NA
Fuel: Jet (120 liters)
Point Value: 617
Template: Med. fixed-wing UAV
Other Features: Remote control interface, rigger adaptation, sprayer (50-liter tank)
Setup/Breakdown: 5 minutes
Landing/Takeoff: Standard
Economy: 1 km/liter
Cost: 15,500¥
Reference: R2

RENAULT-FIAT EUROVAN

The Eurovan is designed with an independent cab onto which various body types can be fitted.

	Handling	Speed	Accel	Body	Armor	Sig
Open Tray	4/10	105	6	4	0	2
Encl. Cargo	4/10	105	6	4	0	2
Camper	4/10	105	6	4	0	2
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Open Tray	2	—	0	2/62	1,500	
Encl. Cargo	2	—	0	2/58	2,500	
Camper	2	—	0	14	550	

Seating: 2 front bucket (all)
2 rear bench (camper)
Entry Points: 2 + o/2 +1T/2 + 1t
Fuel: Gasoline (95 liters)
Point Value: 400/430/500
Template: Van
Other Features: Living amenities (Basic/camper)
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5 km/liter
Cost: 40,000¥/43,000¥/50,000¥
Reference: RBB1

RENRAKU ARACHNOID MINI-DRONE

This 17-centimeter drone is rugged and versatile enough to go anywhere.

Handling	Speed	Accel	Body	Armor	Sig
3/3	2	NA	0	0	16
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	1	0	0	

Seating: None
Entry Points: NA
Fuel: Electric (7 PF)
Point Value: 502
Template: Micro-walker
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 20 meters/PF (Idle: 25 hours/PF)
Cost: 5,000¥
Reference: R2
Other Features: Remote control interface, rigger adaptation

ROLLS-ROYCE PHAETON

This luxury limousine features armored seats and excellent communications gear among its many accessories.

Handling	Speed	Accel	Body	Armor	Sig
4/4	140	8	4	4	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	1	6	30	

Seating: 2 bucket + 3 bucket + 3 folding bucket + 3 bucket
Entry Points: 2 + 2 + 2 + 1t
Fuel: Diesel (250 liters)
Point Value: 2,252
Template: Limousine
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/liter
Cost: 507,000¥
Reference: RBB1
Other Features: APPS, concealed armor, roll bars, enviroseal (gas), satellite uplink (connected by electronics port)

ROLLS-ROYCE PRAIRIE CAT

This unusual vehicle combines luxurious amenities with the toughness and capabilities of a sturdy four-wheel-drive off-roader.

Handling	Speed	Accel	Body	Armor	Sig
3/2	120	4	4	3	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	36	1,000	

Seating: 4 bucket (2 front, 2 rear)
Entry Points: 2 + 2 + 1H + 1g
Fuel: Diesel (100 Liters)
Point Value: 984
Template: Luxury RV
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 8 km/liter
Cost: 246,000¥
Reference: RBB1
Other Features: APPS, amphibious operation (Lvl 3), concealed armor, roll bars, living amenities for 4 (High), luxury accomodations, satellite uplink (via electronics port)

SAAB DYNAMIT 778 TI

This state-of-the-art turbocharged sports car is for the serious speed freak.

Handling	Speed	Accel	Body	Armor	Sig
4/8	250	15	3	0	1
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	3	45	

Seating: 2 bucket (front), 1 bench (rear)
Entry Points: 2 + 1t
Fuel: Gasoline (150 liters)
Point Value: 891
Template: Luxury sports car
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 5.4 km/liter
Cost: 223,000¥
Reference: RBB1
Other Features: APPS, roll bars, turbocharging (factored in)

SAAB-THYSSEN BLOODHOUND

The Bloodhound is a HAZMAT (hazardous materials) drone designed to identify, survey and mark areas contaminated by radiation, biological hazards or chemical contamination.

Handling	Speed	Accel	Body	Armor	Sig
3/3	90	6	1	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	4	1	10	

Seating: None
Entry Points: NA
Fuel: Gasoline (40 liters)
Point Value: 1,005
Template: Med. wheeled drone
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 4 km/liter (Idle: 1 hour/liter)
Cost: 10,000¥
Reference: R2
Other Features: Amphibious Operation (2), chemical/biological/radiation sensors, liquid sprayer (10 liter tank)

SAMUVANI CRISCRAFT OTTER

This five-meter-long utility vessel features a fiberglass open hull.

Handling	Speed	Accel	Body	Armor	Sig
4	45	6	5	0	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	1	18	300	

Seating: 2 folding bucket, 2 folding bench (x2) (reinforced)
Entry Points: 0
Fuel: Gasoline (200 liters)
Point Value: 275
Template: Sport cruiser
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 4 km/liter
Cost: 27,500¥
Reference: SRII
Other Features: None

SENDANKO MARLIN

The Marlin is a fifteen-foot sailboat, said to be favored by smugglers.

Handling	Speed	Accel	Body	Armor	Sig
3	30	3	3	0	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	—	12	150	

Seating: 2 bucket (f), 2 bench (r)
Entry Points: 0
Fuel: Sail
Point Value: 225
Template: Skiff
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: NA
Cost: 22,500¥
Reference: SRII
Other Features: None

SHIAWASE KANMUSHI MECHANICAL CRAWLER

The 10-centimeter Kanmushi drone is ideal for penetrating closely confined areas.

Handling	Speed	Accel	Body	Armor	Sig
3/3	2	NA	0	0	16
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	1	0	0	

Seating: None
Entry Points: NA
Fuel: Electric (4 PF)
Point Value: 502
Template: Micro-walker
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 20 meters/PF (Idle: 25 hours/PF)
Cost: 30,000¥
Reference: R2
Other Features: Remote control interface, rigger adaptation, smart materials

SIKORSKY-BELL MICROSKIMMER

The Microskimmer ACV drone can carry a full suite of standard sensors at high speeds over all types of terrain.

Handling	Speed	Accel	Body	Armor	Sig
5	90	5	1	0	9
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	1	0	4	

Seating: None
Entry Points: NA
Fuel: Electric (120 PF)
Point Value: 122
Template: Small skimmer
Other Features: Remote control interface, rigger adaptation
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: .4 km/PF (Idle: 4 minutes/PF)
Cost: 3,000¥
Reference: RBB1

SIKORSKY-BELL MICROSKIMMER II

The Microskimmer II ACV drone can carry a full suite of standard sensors over all types of terrain, including underwater environments.

Handling	Speed	Accel	Body	Armor	Sig
3	90	6	1	0	7/5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	1	1	5	50	

Seating: None
Entry Points: NA
Fuel: Methane/Electric (150 bars/75 PF)
Point Value: 219
Template: Small skimmer
Other Features: Remote control interface, rigger adaptation
Setup/Breakdown: None
Landing/Takeoff: VTOL
Economy: .75 km/bar, .4 km/PF (Idle: 12 minutes/bar, 2 minutes/PF)
Cost: 5,500¥
Reference: R2

SIKORSKY-BELL RED RANGER

The Red Ranger is a light, ultra-fast ACV designed for scouting and reconnaissance missions.

Handling	Speed	Accel	Body	Armor	Sig
4/6	270	18	3	2	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
3	—	1	10	98	

Seating: 1 bucket + 1 bucket
Entry Points: 1 + 1
Fuel: Gasoline (60 liters)
Point Value: 933
Template: Light hovercraft
Other Features: Amphibious Operation 3
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/liter
Cost: 280,000¥
Reference: RBB1

STEEL LYNX GROUND COMBAT DRONE

The Steel Lynx is a hardened ground-combat machine designed to clear out even the most defensible position.

Handling	Speed	Accel	Body	Armor	Sig
4/6	80	6	2	12	6
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	2	1	3	200	

Seating: None
Entry Points: NA
Fuel: Electric (70 PF)
Point Value: 1,322
Template: Lg. wheeled drone
Other Features: Mini-turret (weapon not included), remote control interface, rigger adaptation
Setup/Breakdown: 5 minutes
Landing/Takeoff: NA
Economy: 2 km/PF (Idle: 1 hour/PF)
Cost: 39,700¥
Reference: FF

SURFSTAR MARINE SEACOP

The Surfstar Seacop is a five-meter, general-purpose patrol craft.

Handling	Speed	Accel	Body	Armor	Sig
3	90	7	3	1	3
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	10	45	

Seating: 1 bucket + 2 bench
Entry Points: 2 + 2
Fuel: Gasoline (100 liters)
Point Value: 506
Template: Armed skiff
Other Features: Electronics port (with radio), 2 external firmpoints (weapons not included), spotlight
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 7 km/liter
Cost: 101,000¥
Reference: RBB1

SUZUKI AURORA

This racing bike is known for excellent handling and performance.

Handling	Speed	Accel	Body	Armor	Sig
2/4	210	11	2	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	1	40	

Seating: 1 bucket
Entry Points: 0
Fuel:Gasoline (15 liters)
Point Value: 360
Template: Racing bike
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 8 km/liter
Cost: 18,000¥
Reference: RBB1

SUZUKI WATERSPORT

The Watersport is a fast, maneuverable waterjet bike.

	Handling	Speed	Accel	Body	Armor	Sig
Elec.	2	30	4	2	0	3
Gas	2	45	7	2	0	5

	Autonav	Pilot	Sensor	Cargo	Load
Elec.	0	—	—	1	15
Gas	0	—	—	1	50

Seating: 1 bucket
Entry Points: 0
Fuel: Electric (300 PF)/Gasoline (20 liters)
Point Value: 265/180
Template: Water scooter
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 1 km per PF/7 km per liter
Cost: 26,500¥/18,000¥
Reference: RBB1

TOYOTA ELITE

The Elite is a full-sized luxury car.

Handling	Speed	Accel	Body	Armor	Sig
4/8	120	12	3	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
4	—	1	11	100	

Seating: 4 bucket (2 front, 2 rear)
Entry Points: 2 + 2 + 1t
Fuel: Gasoline (80 liters)
Point Value: 625
Template: Luxury sedan
Other Features: APPS, enviroseal
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 12 km/liter
Cost: 125,000¥
Reference: SRII

TOYOTA MK-GUYVER SEARCH AND RESCUE ROBOT

The MK-Guyver drone can adjust its programming in response to new, unexpected circumstances.

Handling	Speed	Accel	Body	Armor	Sig
4/4	20/5	4/NA	2	3	4
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
—	3	1	5	1,000	

Seating: None
Entry Points: NA
Fuel: Diesel (20 liters)
Point Value: 965
Template: Large walker
Setup/Breakdown: None
Landing/Takeoff: NA
Economy: 1/.1 km/liter (Idle: 1 hour/liter)
Cost: 29,000¥
Reference: R2
Other Features: Learning Pool 2 (for Search & Rescue), 2 mechanical arms

TOYOTACORP GOPHER

This classic pickup includes a built-in gun safe and excellent off-road suspension.

Handling	Speed	Accel	Body	Armor	Sig
4/4	105	6	4	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
2	—	0	38	500	

Seating: 2 bucket
Entry Points: 2 + o
Fuel: Gasoline (80 liters)
Point Value: 285
Template: Pickup
Other Features: Roll bars
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 6 km/liter
Cost: 28,500¥
Reference: RBB1

THUNDERCLOUD PINTO

This all-terrain trike has balloon tires that give it limited amphibious capability.

Handling	Speed	Accel	Body	Armor	Sig
4/2	85	4	2	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	—	8	40	

Seating: 3 bucket (1 front, 2 rear)
Entry Points: o
Fuel: Gasoline (50 liters)
Point Value: 701
Template: All-terrain vehicle
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 10 km/liter
Cost: 35,000¥
Reference: RBB1

VOLKSWAGEN ELEKTRO

This low-slung three-wheeler is a sleek and stylish commuter car.

Handling	Speed	Accel	Body	Armor	Sig
4/8	75	4	3	0	5
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
0	—	—	1	40	

Seating: 1 bucket
Entry Points: 1
Fuel: Electric (175 PF)
Point Value: 80
Template: Subcompact
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 0.5km/PF
Cost: 8,000¥
Reference: RBB1

VOLKSWAGEN SUPERKOMBI III

Reliable and ruggedly built, the Superkombi is available in several different variants.

	Handling	Speed	Accel	Body	Armor	Sig
Flatbed	4/8	105	7	4	1	2
Pickup	4/8	105	7	4	1	2
Encl.Van	4/8	105	7	4	1	2
Commuter	4/8	105	7	4	1	2
RV	4/8	105	7	4	1	2
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Flatbed	3	—	0	4/44	540	
Pickup	3	—	0	4/32	340	
Encl.Van	3	—	0	4/44	540	
Commuter	3	—	0	10	150	
RV	3	—	0	10	1,190	

Seating: 2 bucket (F)
4 bucket, 2 folding, 2 reinforced (P)
1 bucket, 2 folding bench (V)
4 bucket, 2 folding bench (x5) (C)
4 bucket, 2 folding, 2 reinforced (RV)
Entry Points: 2 + o/2 + o/2 + 1d + 1t/2 + 1d + 1g/2 + 1 + 1
Point Value: 400/400/445/606/900
Template: Flatbed/Pickup/Van/Commuter/RV
Other Features: Living amenities (Improved/RV)
Setup/Breakdown: NA
Landing/Takeoff: NA
Fuel: Gasoline (120 liters)
Economy: 5 km/liter
Cost: 40,000¥/40,000¥ 44,500¥/60,600¥/90,000¥
Reference: RBB1

YAMAHA RAPIER

The Rapier is a fast, lightweight street bike.

Handling	Speed	Accel	Body	Armor	Sig
3/6	195	10	2	0	2
Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
1	—	0	1	40	

Seating: 1 bucket
Entry Points: o
Fuel: Gasoline (15 liters)
Point Value: 255
Template: Racing bike
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 8 km/liter
Cost: 12,700¥
Reference: SRII

ZEMLYA-POLTAVA SWORDSMAN

This mid-sized pleasure boat has a partly-enclosed deck and replaceable twin outboard engines.

	Handling	Speed	Accel	Body	Armor	Sig
Standard	4	75	5	5	0	3
Outboard	4	90	6	5	0	3
Elec.	4	30	3	5	0	5
	Autonav	**Pilot**	**Sensor**	**Cargo**	**Load**	
Standard	2	—	1	14	300	
Outboard	2	—	1	14	300	
Elec.	2	—	1	14	300	

Seating: 2 folding bucket, 2 reinforced folding bench (x3)
Entry Points: o
Fuel: Gasoline (200 liters)/Electric (200 PF)
Point Value: 375/415/400
Template: Sport cruiser
Other Features: None
Setup/Breakdown: NA
Landing/Takeoff: NA
Economy: 4 km per liter/1 km per PF
Cost: 37,500¥/41,500¥/40,000¥
Reference: RBB1

POWER PLANT TABLE

	SPEED		ACCEL		LOAD			ECONOMY		Fuel Size	Design
	Starting	Max	Starting	Max	Starting	Max	Sig	Starting	Max	(Starting)	Pts
ELECTRIC								(in km/PF)	(in km/PF)	(in PF)	
Bikes (all)	60	90	3	6	15	40	5	0.5	2	75	5
Cars											
Subcompact, Sand Buggy, Sedan and Limo	75	100	4	9	40	160	5	0.5	2.5	150	10
Pickup, Van and RV	40	80	2	5	350	1,250	5	0.25	1	200	15
Body 0 Drone	1	5	NA	NA	0	0	16	0.1	0.5	1	10
Tracked Drone	10	40	2	4	5 x B	500 x B	9 – B	0.75 (Idle: 2 min/PF)	1.5 (Idle: 10 min/PF)	10 + (30 x B)	5 x B
Wheeled Drone	10	50	2	5	5 x B	400 x B	9 – B	1 (Idle: 2 min/PF)	2 (Idle: 10 min/PF)	10 + (30 x B)	5 x B
Hovercraft											
Skimmer	90	180	4	10	5 x B	300 x B	8 – B	0.4 (Idle: 1 min/PF)	1.6 km/PF (Idle: 5 min/PF)	50	5 x B
Motorboats											
Skiff and Water Scooter	30	60	3	6	15	40	5	1	5	75	20
Minisub	5	15	2	5	40	160	8	1	5	250	10
Fixed Wing Aircraft											
Ultralight	15/45	15/75	3	6	0	200	9	0.25	1	50	100
Fixed Wing UAV, Micro	40/60	40/125	5	8	2	8	10	5	10	40	10
Rotor Craft											
Rotary Wing UAV, Micro	10	25	3	8	0	0	16	5 meters/PF (Idle: 1 min/PF)	10 meters/PF (Idle: 5 min/PF)	10	10
Rotary Wing UAV, Small and Medium	35	90	3	12	5	75	8 – B	1 (Idle: 2 min/PF)	2.5 (Idle: 5 min/PF)	150	5 x B
Special Vehicles											
Zeppelin	40	125	1	9	1,000	4,000	4	0.25	1	1,000	500
Mini-blimp	40	75	1	5	2	75	9	5 (Idle: 2 hrs/PF)	10 (Idle: 5 hrs/PF)	10	10
Walker	2	15	1	1	5	15	8	0.5 (Idle: 2 min/PF)	1 (Idle: 10 min/PF)	40	10
METHANE								(in km/bar)	(in km/ba)r	(in bars)	
Bikes	40	90	4	9	60	120	4	1.25	2	300	5
Cars											
Subcompact and Sand Buggy	90	100	6	10	40	160	4	1.25	2.5	450	20
Sedan and Limousine	100	140	6	10	60	200	4	1	2.25	500	20
Pickup, Van and RV	80	120	2	5	350	1,600	3	0.5 km/bar	1.5	1,000	20
Tracked Drone	20	35	2	6	10 x B	500 x B	8 – B	0.75 (Idle: 1hr/bar	1.25 (Idle: 3 hrs/bar)	150	20
Wheeled Drone	30	70	2	7	10 x B	400 x B	8 – B	1 (Idle: 1 hr/bar)	2 (Idle: 3 hrs/bar)	150	20
Hovercraft											
Hovercraft, Small	100	240	2	9	400	1,400	3	0.25	1	2,500	20
Skimmer	90	180	5	20	10 x B	300 x B	7 – B	0.25 (Idle: 12 min/bar)	1 (Idle: 30 min/bar)	2,500	10 x B
Motorboats											
Skiff and Water Scooter	20	50	3	10	50	250	4	1	2.25	250	20
Sport Cruiser and Yacht	20	40	3	10	300	1,000	4	0.75	1.5	1,000	20
Minisub	5	20	1	7	250	800	7	0.25	1	2,000	20
Rotor Craft											
Rotary Wing UAV, Small	50	100	3	7	10	500	6	0.05 (Idle: 12 min/bar)	0.25 (Idle: 30 min/bar)	400	20

	SPEED		ACCEL		LOAD			ECONOMY		Fuel Size	Design
	Starting	Max	Starting	Max	Starting	Max	Sig	Starting	Max	(Starting)	Pts
FIXED WING AIRCRAFT								(in km/bar)	(in km/bar)	(in bars)	
Fixed Wing											
UAV, Micro	40/80	40/150	11	14	10	500	5	0.75	1.25	400	20
Special Vehicles											
Walkers	3	9	1	1	5	15	B – B	0.5 (Idle: 1 hr/bar)	1 (Idle: 3 hrs/bar)	150	20
GASOLINE								(in km/liter)	(in km/liter)	(in liters)	
Bikes											
Racing Bike	120	240	10	18	50	100	2	8	16	15	5
All Others	60	150	4	10	80	140	2	10	14	20	5
Cars											
Subcompact and Sand Buggy	90	100	6	10	40	160	2	8	12	40	25
Sedan	100	160	8	14	60	300	2	8	14	60	25
Limousine	100	160	8	14	60	400	2	8	14	60	50
Sports Car	160	270	10	18	40	200	2	6	10	60	65
Pickup	100	140	7	12	250	1,600	2	6	10	80	30
Van and RV	80	120	5	8	350	2,500	2	5	9	95	40
Tracked Drone	25	55	3	9	10	550 x B	6 – B	1.5 (Idle: 1 hr/liter)	5 (Idle: 1.5 hrs/liter)	5	25
Wheeled Drone	35	100	3	12	10	450 x B	6 – B	4 (Idle: 1 hr/liter)	■ (Idle: 1.5 hrs/ liter)	5	25
Hovercraft											
Hovercraft, Small	90	130	5	10	600	1,500	2	0.5 km/liter	3 km/liter	400	50
Skimmer	90	180	5	20	10 x B	300 x B	7 – B	0.5 km/liter (Idle: 25 min/ltr)	1 km/liter (Idle: 45 min/ltr)	25	20 x B
Motorboats											
Skiff and Water Scooter	45	90	6	10	50	250	3	7	10	20	25
Speedboat	75	240	10	18	40	400	2	3	6	100	30
Sport Cruiser	30	100	5	9	350	1,500	3	4	8	200	35
Yacht	30	100	5	9	350	2,500	3	4	8	200	35
Minisub	5	30	2	5	250	1,000	6	1	4	300	25
Rotor Craft											
Rotary Wing											
UAV, Small	40	90	4	8	4	10	4	0.25 (Idle: 10 min/ltr)	0.4 (Idle: 15 min/ltr)	60	25
Fixed Wing Aircraft											
Fixed Wing											
UAV, Micro	40/90	40/200	7	10	4	10	4	0.5	0.75	60	25
Special Vehicles											
Walkers	5	12	1	1	6	18	6 – B	0.25 (Idle: 1 hr/ltr)	1 (Idle: 2.5 hrs/ltr)	5	25
DIESEL								(in km/liter)	(in km/liter)	(in liters)	
Cars											
Limousine	80	140	8	12	180	800	2	6	10	60	65
Pickup	120	200	7	12	1,000	2,000	2	5	9	80	35
Van and RV	80	150	4	9	1,000	3,000	2	4	8	95	35
Medium Transport	65	130	3	6	2,000	5,000	2	4	8	250	35
Heavy Transport	60	120	3	5	6,000	12,000	2	3	6	500	35
Tractors	60	120	3	4	7,500	18,000	2	3	6	750	35
Tracked Drones	25	50	3	7	10	750 x B	6 – B	1 (Idle: 1 hr/ltr)	4 (Idle: 1.5 hrs/ltr)	5	25 + (10 x B)
Wheeled Drones	35	90	3	10	10	600 x B	6 – B	2 (Idle: 1 hr/ltr)	6 (Idle: 1.5 hrs/ltr)	5	25 + (10 x B)
Hovercraft											
Hovercraft, Medium	90	150	5	10	750	2500	2	0.5	2.5	400	75
Hovercraft, Large	90	150	5	10	1,000	5,000	2	0.5	2.5	400	75
Skimmer	90	180	5	20	10 x B	500 x B	7 – B	0.25 (Idle: 20 min/ltr)	1 (Idle: 30 min/ltr)	25	20 + (10 x B)
Motorboats											
Sport Cruiser	30	100	4	6	500	2,500	2	2	6	200	35
Yacht	30	100	4	6	600	3,500	2	2	6	200	40
Minisub	10	70	2	4	400	2,000	6	1	4	300	35
Special Vehicles											
Walkers	5	12	1	1	10	30	4	0.1	0.75	5	35
Armored Personnel Carriers	40	70	5	8	3	6	2	2	4	800	35

POWER PLANT TABLE

	SPEED		ACCEL		LOAD			ECONOMY		fuel Size	Design
	Starting	Max	Starting	Max	Starting	Max	Sig	Starting	Max	(Starting)	Pts
JET PROPELLER								(in km/liter)	(in km/liter)	(in liters)	
Fixed Wing Aircraft											
Ultralight	40/120	40/250	17	20	15	150	6	1	3	60	20
Single Engine	60/130	60/450	20	25	175	750	4	1	3	250	50
Twin Engine	135/280	135/500	20	28	350	2,500	4	1	3	500	75
Airliner	135/320	135/500	22	35	5,000	15,000	3	0.75	1.5	5,000	500
Fixed Wing UAV	20 x B/ 45 x B	20 x B/ 175 x B	30	75	10	225	6	1	3	60	40
Rotor Craft											
Tilt-wing	280	500	10	20	350	2,500	4	0.6	1	750	75
Tilt-wing UAV, Medium and Large	45 x B	175 x B	6	18	10	450		0.6 (Idle: 5 min/liter)	1 (Idle: 15 min/liter)	60	50
Special Vehicle											
Zeppelin	70	250	8	26	1,000	4,000	2	1	3	2,000	300
JET TURBINE								(in km/liter)	(in km/liter)	(in liters)	
Rotor Craft											
Autogyro	60	200	10	20	15	155	4	0.25	0.4	250	25
Utility Helicopter, standard	120	350	10	25	850	3,600	3	0.2	0.35	1,000	50
Utility Helicopter, supercharged	360	500	15	40	400	900	2	0.1	0.3	1,500	100
Cargo Helicopter	120	350	10	25	850	12,000	3	0.2	0.35	1,000	150
Attack Helicopter	250	350	20	35	1,500	5,000	4	0.1	0.3	3,000	1,500
Rotary Wing UAV, all	60	200	6	18	10 x B	450 x B	6 – B	0.25 (Idle: 5 min/liter)	0.4 (Idle: 15 min/liter)	120	30 + (10 x B)
Fixed Wing Aircraft											
Single Engine	60/320	60/400	20	35	250	2,000	3	0.5	0.75	750	100
Twin Engine	135/500	135/800	30	42	500	5,000	3	0.5	0.75	1,500	150
Airliner	150/600	150/1,000	35	60	10,000	75,000	2	0.4	0.6	5,000	1,000
Jet Fighter	150/2,000	150/5,000	80	250	7,500	12,500	5	0.1	0.3	7,500	2,000
Fixed Wing UAV, Medium, Large	20 x B/ 100 x B	20 x B/ $60 \times B^3$	10 + (10 x B)	30 + $(60 \times B^2)$	10	$500 \times B^2$	6	0.5	0.75	120	80
Vector Thrust											
Thunderbird	150/400	150/750	25	60	10,000	20,000	3	0.05	0.3	7,500	2,500
Jump-jet Fighter	700	2,000	50	150	2,000	9,600	5	0.1	0.3	2,500	2,000
Vector Thrust UAV, Small, Large	60 x B	200 x B	10	25	10	500	6 – B	0.25 (Idle: 5 min/liter)	0.4 (Idle: 15 min/liter)	120	30 + (15 x B
Special Vehicles											
Zeppelin	120	400	12	26	1,250	4,500	1	0.5	0.75	2,000	450
SAIL											
Sailboats											
Skiff	30	60	3	7	150	750	6	NA	NA	NA	10
Sport Cruiser	30	50	3	6	250	1,000	6	NA	NA	NA	10
Yacht	30	45	3	6	350	2,500	6	NA	NA	NA	10

Note: B denotes Body

CHASSIS TABLE

CHASSIS TABLE KEY

The following abbreviations appear in this table.

- o = Open access from all directions
- d = Double-sized entry door, such as a sliding van door
- g = Double-sized gate-style entry, with two doors that open ou
- h = Rooftop hatch
- t = Standard-sized rear trunk door
- T = Double-sized rear trunk door, normally connected to passenger cabin
- r = Rear ramp
- B = Bench seat
- e = Ejection seat
- b = Bucket seat

	Handling	Body	Armor	Starting CF	Max CF	Autonav	Pilot	Sensor	Seating	Entry Pts	Setup/ Brkdwn Time	Landing/ Takeoff Profile	Design Pts	Accessories
BIKES														
Scooter	3/6	2	0	0	1	0	NA	0	1b	o	NA	NA	30	None
Racing Cycle	3/6	2	0	1	2	0	NA	0	1b	o	NA	NA	10	None
Off-Road	4/4	2	0	1	8	0	NA	0	1b	o	NA	NA	15	None
Chopper	4/6	2	0	2	6	0	NA	0	1b+1b	o	NA	NA	15	None
All-terrain Vehicle	4/4	2	0	2	15	0	NA	0	1b+1b	o	NA	NA	445	None
CARS														
Commuter/Subcomp.	4/8	3	0	1	16	0	NA	0	1b	1	NA	NA	30	None
Sedan	4/8	3	0	6	30	0	NA	0	2b+2b	2+1t	NA	NA	50	None
Sports Car	4/8	3	0	3	18	0	NA	0	2b	2+1t	NA	NA	110	None
Limousine	4/8	4	0	6	250	2	NA	0	2b+2b+2B	2+2+1t	NA	NA	625	None
Pickup	4/6	4	0	18	42	0	NA	0	2b	2+1t	NA	NA	60	None
Van	4/10	4	0	48	250	0	NA	0	2b	2+1d+1g	NA	NA	60	None
RV	4/4	4	0	48	250	0	NA	0	2b	2+1	NA	NA	250	Living Amenities (Basic)
Sand Buggy	4/4	3	0	4	15	0	NA	0	2b+2b	o	NA	NA	20	None
Medium Transport	5/12	5	0	80	400	0	NA	0	2b	2+1T	NA	NA	300	None
Heavy Transport	5/12	6	0	120	800	0	NA	0	2b	2+1T	NA	NA	385	None
Tractor	5/12	5	0	6	52	2	NA	0	2b	2	NA	NA	175	None
APC, tracked	5/5	7	6	18	98	0	NA	0	1b	1h+1H+1r	NA	NA	750	None
APC, wheeled	4/6	7	6	18	98	0	NA	0	1b	1h+1H+1r	NA	NA	750	None
Crawler, Micro	4/4	0	0	0	0	NA	1	1	0	NA	None	NA	220	Remote Control Interface. Rigger Adaptation
Crawler, Small	4/4	1	0	0	6	NA	1	1	0	NA	3 minutes	NA	115	Remote Control Interface. Rigger Adaptation
Crawler, Large	4/4	2	0	2	12	NA	1	1	0	NA	5 minutes	NA	215	Remote Control Interface. Rigger Adaptation
Remote Patrol Vehicle (RPV)	3/6	2	0	1	6	NA	2	1	0	NA	NA	NA	215	Remote Control Interface. Rigger Adaptation
HOVERCRAFT														
Hovercraft, Small	3	3	0	12	30	0	NA	0	2b	2+1t	NA	NA	70	None
Hovercraft, Medium	4	4	0	60	240	0	NA	0	2b	2+1T	NA	NA	100	None
Hovercraft, Large	5	5	0	100	480	0	NA	0	2b	2+1T	NA	NA	250	None
Skimmer, Small	3	1	0	0	0	NA	1	1	0	NA	None	NA	250	Remote Control Interface. Rigger Adaptation
Skimmer, Large	3	2	0	0	8	NA	1	1	0	NA	None	NA	350	Remote Control Interface. Rigger Adaptation
MOTORBOATS/SAILBOATS														
Skiff	3	3	0	6	25	0	NA	1	2b	o	NA	NA	75	None
Water Scooter	3	2	0	0	1	0	NA	0	1b	o	NA	NA	100	None
Speedboat	3	3	0	0	30	0	NA	0	1b	1	NA	NA	110	None
Sport Cruiser	4	5	0	36	84	1	NA	1	2b	o	NA	NA	125	None
Yacht	5	7	0	80	108	2	NA	1	2b	1	NA	NA	200	Living Amenities (Basic)
Minisub	4	4	0	0	84	2	NA	1	1b	1h	NA	NA	200	None

CHASSIS TABLE

	Handling	Body	Armor	Starting CF	Max CF	Autonav	Pilot	Sensor	Seating	Entry Pts	Setup/ Brkdwn Time	Landing/ Takeoff Profile	Design Pts	Accessories
ROTOR CRAFT														
Autogyro	4	3	0	0	8	0	NA	0	1b	o	NA	VTOL	20	None
Utility Helicopter	5	4	0	50	75	1	NA	1	2b	2+2d	NA	VTOL	500	None
Cargo Helicopter	5	7	0	80	600	1	NA	1	2b	2+2d	NA	VTOL	1,000	None
Tilt-wing	6	5	0	48	96	1	NA	1	2b	1+1	NA	VTOL	600	None
Attack Helicopter	5	5	0	4	64	2	NA	3	1b	1	NA	VTOL	1,000	None
Rotary Wing UAV (S)	4	0	0	0	0	NA	1	1	0	NA	None	VTOL	310	Remote Control Interface, Rigger Adaptation
Rotary Wing UAV (M)	4	1	0	0	1	NA	1	1	0	NA	3 minutes	VTOL	710	Remote Control Interface, Rigger Adaptation
Rotary Wing UAV (L)	4	2	0	1	12	NA	1	1	0	NA	5 minutes	VTOL	1,210	Remote Control Interface, Rigger Adaptation
Tilt-wing UAV (M)	4	2	0	1	12	NA	1	1	0	NA	None	VTOL	1,460	Remote Control Interface, Rigger Adaptation
Tilt-wing UAV (L)	4	3	0	2	25	NA	1	1	0	NA	None	VTOL	2,210	Remote Control Interface, Rigger Adaptation
FIXED WING AIRCRAFT														
Ultralight	4	2	0	0	8	0	NA	0	1b	o	NA	Standard	20	None
Single Engine	5	4	0	21	63	1	NA	1	2b	1+1	NA	Standard	75	None
Twin Engine	5	6	0	48	600	1	NA	1	2b	1+1	NA	Standard	125	None
Airliner	6	9	0	500	7500	3	NA	1	2b	2+2+1	NA	Standard	2,000	None
Jet Fighter	6	7	0	6	64	3	NA	5	1e	1	NA	Standard	2,000	Enviroseal (gas)
Fixed Wing UAV (S)	3	1	0	0	0	NA	1	1	0	NA	3 min	Standard	710	Remote Control Interface, Rigger Adaptation
Fixed Wing UAV (M)	4	2	0	1	12	NA	1	1	0	NA	5 min	Standard	1,460	Remote Control Interface, Rigger Adaptation
Fixed Wing UAV (L)	4	3	0	2	25	NA	1	2	0	NA	10 min	Standard	2,210	Remote Control Interface, Rigger Adaptation
VECTOR THRUST														
Thunderbird	5	6	0	16	96	2	NA	3	1e	1h+1d+1r	NA	VSTOL	2,500	Enviroseal (gas)
Jump Jet Fighter	6	7	0	6	64	3	NA	5	1e	1	NA	VTOL	2,000	Enviroseal (gas)
Vectored Thrust UAV (S)	4	2	0	1	12	NA	1	1	0	NA	None	VTOL	1,460	Remote Control Interface, Rigger Adaptation
Vector Thrust UAV (L)	4	3	0	2	25	NA	1	1	0	NA	None	VTOL	2,210	Remote Control Interface, Rigger Adaptation
SPECIAL VEHICLES														
Zeppelin	5	8	0	48	96	1	NA	1	2b	2	NA	VTOL	1600	None
Mini-blimp	4	2	0	1	6	NA	1	1	0	NA	None	VTOL	240	Remote Control Interface, Rigger Adaptation
Anthroform	3	2	0	0	1	NA	1	1	0	NA	None	NA	400	Remote Control Interface, Rigger Adaptation, Mechanical Arms (2)
Walker, Micro	4/4	0	0	0	0	NA	1	1	0	NA	None	NA	265	Remote Control Interface, Rigger Adaptation
Walker, Small	4/4	1	0	0	4	NA	1	1	0	NA	5 minutes	NA	165	Remote Control Interface, Rigger Adaptation
Walker, Large	4/4	2	0	1	10	NA	1	1	0	NA	8 minutes	NA	240	Remote Control Interface, Rigger Adaptation

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RIGGER RECORD SHEET

NAME | RACE

SEX | AGE | DESCRIPTION

NOTES

ATTRIBUTES

Body		Reaction	
Quickness			
Strength			
Charisma			
Intelligence		Initiative	
Willpower			
Essence			
(Magic)			

CONDITION MONITOR

	Light Stun	Moderate Stun	Serious Stun	Deadly Stun
Stun	+1TN ∅ -1 Init.	+2 TN ∅ -2 Init.	+3TN ∅ -3 Init.	Unc.
Physical	+1TN ∅ -1 Init.	+2 TN ∅ -2 Init.	+3TN ∅ -3 Init.	Unc. Maybe Dead
	Light Wound	Moderate Wound	Serious Wound	Deadly Wound

Physical Damage Overflow

KARMA

Karma Pool

Good Karma

SKILLS

Name	Rating

DICE POOLS

Combat Pool

Control Pool

_____ Pool

_____ Pool

ARMOR/GEAR

Type	Rating

CYBERWARE/BIOWARE

Type	Rating

EDGES & FLAWS

Type	Rating	Type	Rating

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WEAPONS

Name	Type	Concealability	Reach	Mode	Ammo	Short	Medium	Long	Extreme	Damage	Modifiers

REMOTE CONTROL DECK

RATING ____ **FLUX:** **Current:** ____
Maximum: ____

IVIS Pool ____

SUBSCRIBER TABLE
Active Drones = Deck Rating
Total Drones = 2x Rating

Accessories	Rating	Drone	Active? (✓)

FLUX RANGES

0	250M
1	1 km
2	2 km
3	4 km
4	6 km
5	9 km
6	12km
7	16 km
8	20 km
9	25 km
10+	(2 x flux) +10 km

CONTACTS & INFO

CHARACTER NOTES

EQUIPMENT AND GEAR

PRIMARY VEHICLE RECORD SHEET

NAME (optional)

MODEL

TYPE

VEHICLE

Handling	_____	**Firmpoints**	_____	**TOTAL COST:**	_____ ¥
Speed	_____	**Hardpoints**	_____		
Max. Speed	_____	**Fuel:**	_____	**Maintenence cost:**	
Acceleration	_____	**Economy:**	_____	**(total cost ÷ 100)**	_____ ¥
Body	_____			**Optempo cost: (Opt.)**	
Armor	_____	**Cargo:**	_____	**(Maint. cost ÷ 20,000)**	_____ ¥
Signature	_____	**Load:**	_____		
Autonav/pilot	_____	**Stress:**	_____		

SENSORS

	RATING	FLUX: CURRENT/MAX	OPTIONS MODIFICATIONS & NOTES
Sensors	_____	_____ / _____	_____
ECM	_____	_____ / _____	_____
ECCM	_____	_____ / _____	_____
ED	_____	_____ / _____	_____
ECD	_____	_____ / _____	_____

SIGNAL CONDITION MONITORS

	Command Channel	Simsense Channel	System Channel	
Channel Disengaged				Channel Disengaged
Serious Degradation	+3TN #	+3TN #	+3TN #	Serious Degradation
Moderate Degradation	+2 TN #	+2 TN #	+2 TN #	Moderate Degradation
Light Degradation	+1TN #	+1TN #	+1TN #	Light Degradation

VEHICLE CONDITION MONITORS

Light Damage		Moderate Damage			Serious Damage				Destroyed
+1TN # -1 Init.		+2 TN # -2 Init.			+3TN # -3 Init.				CRASH TEST
NA		25%			50%				

Speed Rating Reduction

VEHICLE NOTES

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VEHICLE CONSTRUCTION WORKSHEET

0. State the overall concept of the vehicle, drone, or robot.

	CARGO (CF)	LOAD (KG)	DESIGN POINTS
I. Build a template.			
a. Select a chassis.	_____		a. _____
b. Select a power plant.			b. _____
c. Starting Design Point, Cargo and Loading Values.	_____	_____	c. _____
II. Add design Options and Vehicle Modifications. (a + b)	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
d. Total Design point cost of options and modifications.	_____	_____	d. _____
e. Total Design Point Cost (c + d)	_____	_____	e. _____
III. Calculate Mark-Up Factor			
f. Chassis Category.			f. _____
g. Special Features/Unusual Equipment or Quality Factors.			_____
_____			_____
_____			_____
_____			_____
_____			_____
_____			Subtotal g. _____
h. Special Designs			
Multiplier			_____
Multipiler			_____
			Subtotal h. _____
i. Total Mark Up Factor: (f + g) x h			i. _____
IV. Determine Final Vehicle Price			
j. Final Design Point Value			j. _____
k. Calculated vehicle price (j x 100¥)			k. _____
FINAL VEHICLE PRICE (approved by gamemaster)			_____ ¥

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GEAR HEADS, GREASE MONKEYS AND SPEED JUNKIES

RIGGERS ARE BACK!

"Taking the datajack cable from under the dash, I plug it into the jack under my ear. Then I sit back as the virtual display blossoms before my eyes. Dizziness hits me for a split second; then my mind adjusts to the blizzard of input from the view screens and sensors that are arrayed before me. The screens show views from every angle, as well as numerous data displays—from the amount of fuel in my 'copter's tank to the infrared displays of the people here at the landing pad. As the datafeed pours into my brain, I'm no longer just the human named Zagger. Instead, I am now my machine. I AM the Yellowjacket hellcopter. I AM A RIGGER!

Rigger 2 overhauls and expands on the rules for riggers in Shadowrun. From creating a rigger character to down-and-dirty vehicle combat to electronic warfare, this book offers clear, concise rules for practically every aspect of playing a Rigger or dealing with a rigger's vehicles and drones. Also included are the rules for robotics, vehicle construction and modification, using security riggers in your game, and a comprehensive list of every vehicle in **Shadowrun** products published to date.

Rigger 2 replaces the **Rigger Black Book**.
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